

PYROTECHNICS

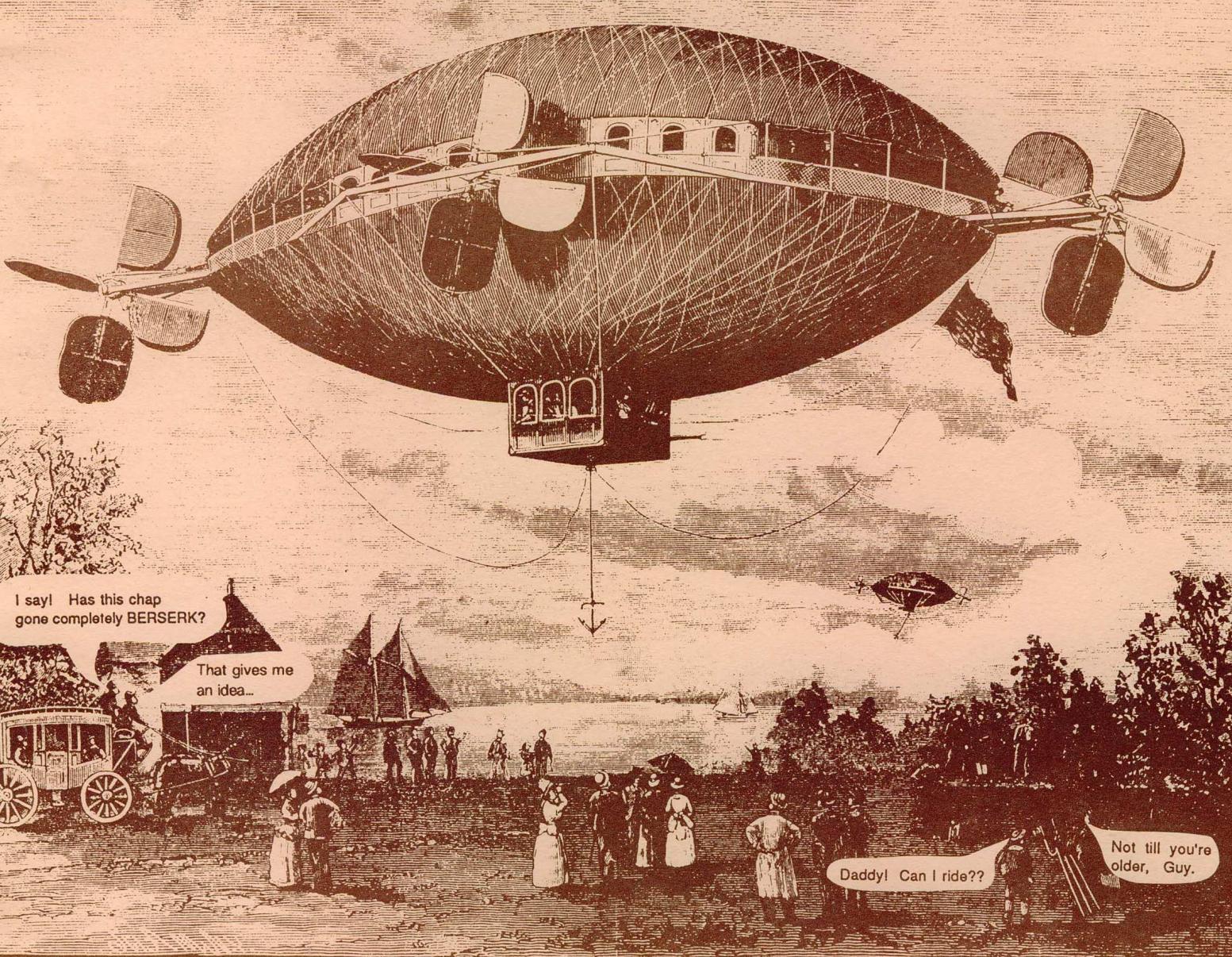
The Now and Then News Letter of General Technics

SPECIAL

#50

ISSUE!!

*Tall Techie Tales:
Legends from our Past*



Early GT event, circa 1890

PYROTECHNICS

SPECIAL #50 ISSUE!!

Tall Techie Tales: Legends from our Past

September 1993

Editorial

Mary Lynn S. Johnson

Well, well. Here we are at last with Issue 50 of *PyroTechnics!* Just what is going on here you may ask? Well, a few years back I was handed a copy of *The Legends of Caltech*; a book of sorts that allowed alumni of that school to put down in writing some of the tales of pranks and mayhem they'd perpetrated over the years. After reading this wonderful collection, I realized that the members of GT (which has a lot of crossover membership with the Permanent Floating Riot Club—Michigan Technological University's science fiction club) had a lot of the same kinds of stories, which up until then had only been handed down by retelling at parties and cons. While most of our tales don't match the sheer lengths the Caltech guys went to to achieve a prank, some of them are pretty good in their own right and really do merit preservation.

With this in mind, we asked that the members of GT and PFRC to sit down and write their memoirs, their exploits, their adventures as techies and enthusiasts of science in general so we could share them in printed form. Some of them are outrageous, some silly, some are like biodatas, but all are good reading and I really appreciate everyone going the extra mile for us on this project. It took quite a while to get the ball rolling, but once it got moving it became a juggernaut. The results are what you hold in your hands. And it probably won't stop here. We could almost do a second volume from the material that isn't in this one because some of the writers missed the deadline.

If what you read here reminds you of another story, or inspires to to finally write down one you'd forgotten, then cuddle up to your keyboard for awhile and tell us all about it. We'll be happy to continue running your tales in regular issues of *Pyro*. I for one would love to hear as many as you care to tell.

SUBSCRIPTION RATE CHANGE

Effectively immediately, PYROTECHNICS subscription rates have changed to \$5.00 for 4 issues. This is due to the fact that we have successfully weathered two postal rate increases and a printing rate increase, but are facing more. This new rate will allow PYRO to continue paying all its own bills without financial sandbagging from any one individual. (For rates outside the US, please refer to the colophon at the end of this issue.)

Another problem...

Another thing that needs addressing is the problem of people failing to send their subscriptions to the PO Box. While it is tempting to hand your bux to Connie, Bill or Barry personally, please do not do so. It can mean that your subscription could be delayed by months or even lost entirely if you do. I have already had to unravel a few of these this year and would like to avoid more.

The reasons for this are simple: Connie handles the money, but does NOT handle the mailing list. Dave does. The subscription info has to be forwarded to Dave before the money is sent to Connie for processing. So save yourself, and me, the frustration of having to backtrack and find out what happened by simply giving it to me when I'm attending a con or sending it to the Box.

Also, please be careful to make out your checks or money orders to CONNIE TREMBLEY. Not me, not PYRO or GT. To do so will mean that your subscription will be held up while we send your check back to you and wait for you to send us a new one.

Thanks!

Mary Lynn

QUARKS

- Beam Me Up, Dr. Scotty: According to the July 1993 issue of *Sensors* magazine, the Milwaukee School of Engineering awarded an honorary Doctor of Engineering degree to James Doohan. Says editor Dorothy Rosa, "Doohan was single-handedly responsible for the career decisions of any number of engineers." Single-handedly? Well, Gene Roddenberry and James Watt, among others, might have had something to do with it too. Nevertheless, we're glad to hear about it. Wonder if somebody will give Nimoy a D.Sci.?

- To go from fake Scotsmen to real ones, *PyroTechnics* has acquired our first subscriber in Scotland: Bruce Grant, a cat lover from Aberdeen. Welcome aboard, Bruce, and we hope you enjoy being a part of our scheme of relentless cultural imperialism, expanding our grip to encompass techies around the world! *ahem* One other thing, Bruce, if this is your first issue: expect subsequent ones to be a lot thinner.

- From Oxford, incorrigible pyrotechnician Dermot Dobson writes: "A friend of mine in the local Police force has made some enquiries for me and I should shortly be getting my (newly revised) Explosive Magazine Licence. This sets a limit of 1500 kg of explosive material in my garage—so

long as I have an extinguisher in there. Think this is a sufficient quantity for a party???"

• Pyro congratulates Clif Flynt and Carol Clapper, who were married in Glenview, Illinois, on May 1st. Clif and Carol are both well-known filksingers, and their invitation, which promised that the ceremony would be followed by a reception and filk, caused great puzzlement to their non-fannish family & friends and ultimately to a few reference librarians. The happy couple has settled in (or at least moved to) Dexter, Michigan.

• "Filk" may not have entered the general American lexicon, but another fannish term seems poised to do so. *Trash Cash, Fizzbos and Flatliners*, edited by Sid Lerner, Gary S. Beckin and the editors of *The American Heritage Dictionary*, is a collection of new and possible ephemeral words and phrases added to American English in the 90s. One of these "new" words is "gafiate" (short for "get away from it all"), a term that's been used for decades in fandom. Will the egoboo of contributing to the language outweigh the danger of being grokked by mundanes? Ghu only knows.

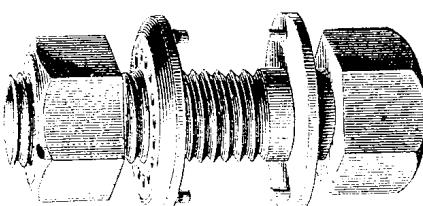
• Once again GTer Martha Soukup was nominated for a Hugo award for Best Short Story. Her story "The Arbitrary Placement of Walls" appeared in the April 1992 issue of *Isaac Asimov's Science Fiction Magazine*. Alas, the winning Hugo went to somebody else, but we're still mighty proud of Martha.

• The matrimonial bug was positively epidemic among Michigan techies this summer! Cindy Nelsch made a groom of Chris Osterling, Video Rocket Ranger, on August 7 in Cuyahoga Falls, Ohio (but they're living in the Detroit area). Doug Ifversen tied the knot with Stephanie Poll in Canton, Michigan on August 14. And Judy Shapiro married Tom Snoblen in a lively outdoor ceremony in Saline on August 22. Congratulations to all the happy couples.

• Prices on the LM555 timer, one of our favorite integrated circuits, have tripled in the IC crisis this summer (a factory in Japan burned down, depriving the IC world of much of its supply of epoxy resin, and no doubt making an awful smell too). Maybe now is the time to unload your hoard and make a bundle...

PHOTOGRAPHIC CREDITS

By the way...Since PYRO 50 has been blessed with some photos at the last minute, I didn't have time to generate proper credits for all the people whose pictures I used. If you see one in here that doesn't mention that YOU'RE the one that took it, blame me. It is here that I want to thank each and every one of the tolerant souls to whom credit is due!



A WORD OF THANKS

The Trembley family

On Wednesday July 28th, Bob and I got up at 2:30a.m. and proceeded to pack our camping gear, and our children in a van we had borrowed from Bob's boss, and one hour later we were on our way up to Houghton for a much needed and much anticipated vacation. We drove in tandem with the Helous, stopped at Sea Shell City in Cheboygan Mich. A second stop was made at the Marquette prison store, where we parted company with the Helous (they stayed to eat, we went on to Houghton).

We arrived at Houghton and M.T.U. around 3:00p.m. marveling at all the changes and everything we wanted to explore, but continued on to McLain State Park, leaving the exploring for later. We pulled into the park around 3:30p.m., handed in our camp registration and in return with our registration were handed back a yellow sticky saying "Emergency - Call Home." Upon calling Bob's house I was notified that his father had died that morning.

The emotions that ran through us are very difficult to describe; extreme disappointment, frustration, sorrow, anger, and disbelief. Compounding them were the tears of our daughters after telling them we had to leave and go home. Bob and I stayed for about three and a half hours, hoping to see some of our friends, but at 7:00p.m. we began our journey back home. I managed to drive six hours and get all the way back down to Gaylord (an hour south of the bridge) before exhaustion caught up with me. After spending the night we set out at 9:00a.m. the next morning and managed to make it home by 1:30p.m. where we showered, got dressed and headed back up to Grand Blanc (a suburb of Flint.)

Bob's dad had been ill for the past three years with Alzheimer's, but shortly after last Memorial Day, he went into the hospital and was diagnosed with Aplastic Anemia, a terminal condition that causes your bone marrow to stop producing platelets. For two months we had heard that he had only a couple of days to live, well he outlived their predictions and was placed in a home. Every time the phone rang we jumped, so you can imagine that by the time of the berserker we were looking forward to taking a much needed vacation. We knew that if he died while we were up there that we would have to leave, we just thought we would have longer than 3 hours. Even though we knew this was coming I can honestly tell you that it doesn't make it any easier.

On Friday afternoon Bob and I arrived at the funeral home and I began looking at all the flowers and plants that were continuing to arrive, when I noticed in one corner a very large beautiful umbrella tree. I went over to it and read on the card "our thoughts and love are with you, your friends at GT and PFRC." It was the first time I cried. I brought Bob over to show him the plant, and he said he had seen it and wanted to try to get it and take it home, I asked him to read the card, and when he did he broke down. We always knew that we belonged to a very special group of people, but it wasn't driven home until we saw that plant, and understood the time and effort it took to send it. We can't begin to tell you how much it meant to us, and how loved we felt, it truly was a gesture that we will always remember, and was so very much needed at that time. The warmth we felt both up at the campsite, and through the umbrella tree will always be remembered. Somehow these words don't seem adequate but they're all we've got to tell you how much we appreciate your thoughts and kindness.

---from the bottom of our hearts, THANK YOU! ---Connie

SOMEONE'S GOT A SCREW LOOSE

Sam Paris

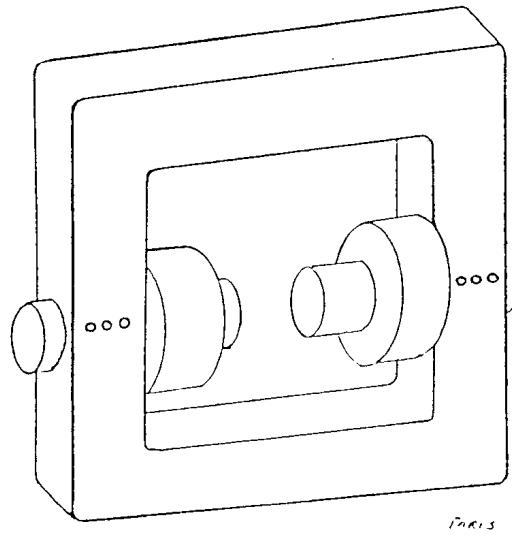
Back in the NEIU physics department we had a lab aide named Frank. Frank was a pretty smart guy, but was prone to sudden enthusiasms. When in the grip of his latest mania, he tended toward a sort of cut and try approach, rather than to sit and think things through.

One day Frank read about magnetically induced phosphenes. These are bright flashes that you "see" when you move your head around in a strong magnetic field. They have, I believe, something to do with current induced in the optic nerves.

Frank thought this sounded really neat and wanted to try it immediately.

So he dragged me down to the nuclear lab (where we kept the big magnets) to help him set up this daft project. I almost didn't go (I was pretty dubious about the wisdom of amateur neurological research), but I've always been grateful that I did.

The electromagnet we had was in the form of a large, square iron doughnut with two soft iron cylinders called poles or pole pieces going through opposing sides and facing each other inside the hole.



ELECTRO MAGNET

The spacing between the poles was adjustable. You loosened (with the magnet off!) a batch of set screws that bound the poles to the iron doughnut. Then you positioned the poles by hand (tough going, they weighed about 50-60 lb. each), and retightened the set screws. The set screws had to be tight because the poles were carrying a large magnetic field and attracted each other with great force.

Frank set about adjusting the pole pieces to their maximum spacing so he could get his head into the magnetic field between them. This took a fair amount of fiddling, since the magnet was not designed to hold an experiment as large as Frank's skull. In the meantime, I connected the high current power supply and the cooling water hoses. These jobs had to be done properly, for an interruption in either water or current at full power could ruin the rather expensive coils that drove the magnet.

As I finished my jobs, Frank stuck his head between the poles and yelled "Throw the switch, Igor!" I told him to pull his head out and let me test the connections first. Grudgingly, he straightened up and let me ramp the current up slowly, watching the coolant temperature and the voltage. When I got it up to full current with no problems, Frank sarcastically asked, "Is it OK

now, Mom?" I was about to say yes when I saw that Frank had forgotten the set screws! Apparently the poles were held in place only by dirt or corrosion or some such.

I have never been able to resist the grand gesture.

I picked up a short length of 2x4 and slapped the bench top with it. The poles smacked together so fast that their ends mushroomed.

"Sure Frank," I smirked, "go right ahead."

I don't know if he ever did get to see phosphenes.

MR. BUBBLE

Todd Johnson

In fifth grade I built a hydrogen generator from three glass one gallon jugs and some tubing. It used muriatic acid and aluminum foil as the reactants in one jug, the others were cooling and filtering to get rid of acid fumes. One of the best things I found I could do with a supply of light gas was to bubble it through a solution of water and dish soap, producing a slowly growing tower of suds which eventually would break off and go sailing around the yard. A few minutes of this would produce a swarm of white globules the size of basketballs drifting with the breeze. Thinking back, I wonder if any of these ever came down in inappropriate places like somebody's windshield while driving, or perhaps one touched down in a punchbowl at a wedding reception. You never think of these sorts of consequences when you're a kid.

NAME YOUR POISON

Todd Johnson

At a local gem and mineral show several years ago, Mary Lynn bought some ring settings, a few large lapis cabochons, and other miscellaneous hardware which we managed to fashion into an old fashioned "Borgia" ring. The stone would open up on a tiny hinge to reveal a small compartment within. (And I HELPED her with this??! gulp!) She wore it to dinner one evening when Cap'n Al was visiting, and as we waited for our meal, we put the plan into action. She asked for something in her coat, which was next to me in the booth. As I turned to rummage in the pockets she made sure Al was looking as she quickly opened the ring and dumped a bit of white powder (aspartame) in my iced tea and gave it a brief stir.

When I turned back to the table I found Al having some sort of convulsions. His face was bright red, his hand was over his mouth and he was bobbing up and down making strange strangled noises. When he at last recovered from his stifled laughter, he said "Now I know why I come to visit you guys. NOTHING like that would ever happen back home!" As fine a compliment as we could wish for.

She tried the ring stunt on several occasions with large groups present, and often it was met with stunned silence. Occasionally someone thought it funny, but NEVER ONCE did anyone tell me that my drink had been doped. Thanks a lot, "friends"!

MMM! TASTY!

Dawn Kuczwarra

For the past several years, I have been working as a research assistant at the Morton Arboretum. Most of my time there has been spent as an assistant to an entomologist. During the height of the "bug season" one of my duties was to come in on Saturdays and check the little buggers. One Saturday, when I expected to have a rather short day, I dragged Paul with me to help. Paul has never been a "bug lover", and the thought of having to be in the same room as a bunch of insects made him uncomfortable to say the least. I explained to Paul that the insects were all in the incubator, and while they were close to breaking the pupal stage, I certainly didn't think they ALL would have over night. Not even a few should have broken out yet. This eased Paul's mind a little, and off we went.

Shortly after entering the lab, I noticed a few insects on the window. Funny, I thought. There shouldn't be any in here except for the ones in the incubator. Maybe a few had gotten out. If that were true, I was going to have to find how they were getting out of the incubator before any more broke out. If I didn't, the entire window would be covered with insects, as this particular type liked going where ever the light was. In terms that were a gentle as I could muster on short notice, I let Paul know that there was a problem, and that I couldn't leave until I had nailed it down. The only thing that bothered Paul was that we were going to be in this room where we - allowed - (bold face type) insects to roam free.

I went to the incubator, and Paul came over too, hoping to help me find the problem so we could leave. I opened the incubator, and to my surprise, found that the insects had broken the pupal stage. I don't mean two insects, or ten insects; I mean more like - three hundred insects - (bold face type) had emerged overnight. And they all wanted to get at the light.

Unfortunately, the light that these little guys wanted was the sun, streaming through the window. Nothing was going to keep them from that window. Not even poor Paul, who was standing between the incubator and the window with all that glorious sunlight streaming through it. Paul's first reaction was a poor choice: He opened his mouth and yelled. He never told me how many insects he'd actually swallowed. His only answer is "Too many."

To add insult to injury, all of the insects were on the window, and we had to get them down. We only got three full experiments in a year, and if these guys got away, or were spoiled by eating something, we would lose one of our chances. I let Paul choose which end of the job he wanted, and then I began gently scraping the insects off the window while Paul got to scrape them into a bag for later use. He kept saying, over and over again, "I can feel their little legs grabbing me! Ugh!" Paul never came back to help me again.

ET FOAM HONED

Bill Higgins

I was in Huntsville, Alabama last spring for the annual International Space Development Conference, where members of the National Space Society and fellow travelers meet. Of course I had to visit the Alabama Space and Rocket Center, home of Space Camp, a Saturn V, and other wonders.

The weirdest thing I saw was their Shuttle. They have created a complete launch assembly by mounting a test (non-flying) Shuttle Orbiter, the *Pathfinder*, on a big orange External Tank, and strapping Solid Rocket Boosters to it.

The whole thing is mounted on tall concrete pylons slanting into the sky, so you can walk underneath the belly of it and gawk. It's orbiter-on-top, by the way, the way you think it *ought* to look, rather than orbiter-on-bottom the way it actually flies into space.

As Josh Hopkins and I strolled around it, I looked closely at the external tank and noticed something strange. The tank is covered with a few inches of orange insulating foam. The foam had a lot of little dark marks on it, about a centimeter long. At first I thought the damage must come from birds pecking at the tank or something. But how would birds attack the underside of a big cylinder with nowhere to perch?

Gradually I realized that the scars were pennies! People fling pennies into the foam, like ninjas hurling shuriken, and if they're moving fast enough they stick. In a few places I could see ballpoint pens and screwdrivers sticking out of the ET. I was looking at hundreds of pennies embedded in the foam of the tank. Kind of a high-tech wishing well.

As I told Josh, I guess this monument symbolizes NASA's recipe for a space program:

Take one Shuttle, then keep throwing money at it.

WHAT'S "ANGUS", ANYWAY?

Gabe Helou

What is this angus.mi.org and why do you spend so much time with it?

Audrey and I are the owners and operators of angus.mi.org, a small public access unix system. We didn't start out to establish such a system, it sort of evolved. In order to understand how we came to set up a computer system that takes so much of our spare time, I'll go back and explain how we got to where we are today.

Years ago, when we first moved to Detroit, we spent a fair amount of time at friend's homes. Nothing unusual about this. As it happened, most of our friends have an interest in computers and we would, at various times, discuss software packages that we liked. Frequently, someone would ask, "Could someone get a copy of that for me?" Usually, somebody would announce they had that software and their computer. Often, that somebody was me. The problem was that I was one place and my computer was somewhere else.

My solution to this was to leave my computer on 24 hours a day. If I wasn't using it, I would run a communications program that was set to a mode where it would answer the phone and let someone issue some minimal commands from another computer. The software provided a simple password check and the ability transfer files over the phone lines. This was as much as I needed.

At the time, we only had one phone line, so it was a little tricky having the telephone/ansering machine and the computer on the same line. We worked out a routine that involved calling, hanging up, and calling again right away if we were trying to connect to the computer. This set-up allowed us to have remote access to our home computer system. It also provided limited access to people we trusted.

For almost a year, this arrangement was sufficient. I don't remember how many times I was at Bob & Connie Trembley's and called home to pick up the latest version of something that Bob didn't have. "Why," I wondered, "would I ever need anything more than this?"

The answer came in the form of some friends who were working on a project together, but didn't live close to each other. Since I was working with them on this venture, I offered to set up my home system as an electronic bulletin board system (BBS). It would be available on the same basis as before, but would have better control over files and access control.

Later, we decided that a second phone line would be a good idea since I often dialed into my employer's computer at night to fix problems. Since the second phone line was designated as a computer line, it made sense to have the BBS running any time I wasn't using the line for calling into Ford's computer system. Thus we ended up with a (mostly) 24-hour BBS.

Having the computer available most of the day on a dedicated phone line changed the whole focus of the BBS. I no longer had to give people strange instructions on how to connect to our computer; we now had it set up to answer the line on the first ring. We encouraged our friends to use the computer as a message board, leaving each other electronic mail. We even set up a few conferences where people could post public messages and discuss topics as a group.

At this point, our BBS was still a stand-alone system. That is, it did not communicate with any other computers for the purpose of automatically passing files back and forth. This meant that the users could only send e-mail to other people on our BBS. Audrey and I were interested in being able to communicate with friends scattered across the country. In many cases, these were people who we exchanged e-mail with when we were in college and we missed doing this. The quest for network access was begun.

After talking to several people in the area, we found out that a friend of ours a mile up the road operated a major e-mail hub for the northern-Detroit suburbs. A couple of weeks of testing software and getting our BBS configured properly and angus.uucp was born. We now had access to the Internet/UUCP network, a world-wide network of computers ranging from personal systems like ours to large mainframes in government and universities.

These days, our system is known on the net as angus.mi.org. We have a few users on the system who are able to exchange e-mail with people on virtually any other major computer network in the world (except Prodigy). In addition, angus.mi.org carries over 300 Usenet newsgroups -- forums for public discussion of topics ranging from cooking to politics to programming. Just about anything you can think of.

This increased access to the rest of the world has its price. We are still using one phone line dedicated to angus.mi.org. The biggest problem we have is that one phone line is not enough. We now spend so much time talking to other computer systems, exchanging e-mail and news, that the people who use our system have a hard time connecting to it. The phone is busy far too often. The problem was compounded by the fact that angus would spend 2 hours communicating with another computer, then spend another hour processing the information it had received. On top of all this, angus receives so much news that we would frequently run out of space to store the information.

As the BBS matured, Audrey and I decided that we really liked providing people with access to "the net." For the last couple years, we've been giving people access free of charge. Some generous individuals have pitched in to help us meet the costs of running the system; we really appreciated this. Last year, I cost us around \$1200 to operate angus.

We are now in a state of transition. After deciding that we couldn't keep operating the system at such a loss, we decided to enforce a pay-for-use policy for most services. We still plan to provide people with e-mail at no cost, but will ask people to pay part of the cost of the more expensive services.

In order to justify this, we have to make angus available more often than it has been recently. This is where a lot of the cost of maintaining the system comes from. In order to increase people's access and deal with the amount of news that is coming across the phone line, we are planning to:

- Increase online storage by over 500% (from 240 megabytes to over 1500 megabytes). We already have the new large disk drive to handle this. We just need to find the time to install it.

- Restrict the hours we are communicating with other computer systems. We can do most of the data transfers at night and free the phone line up during the day.

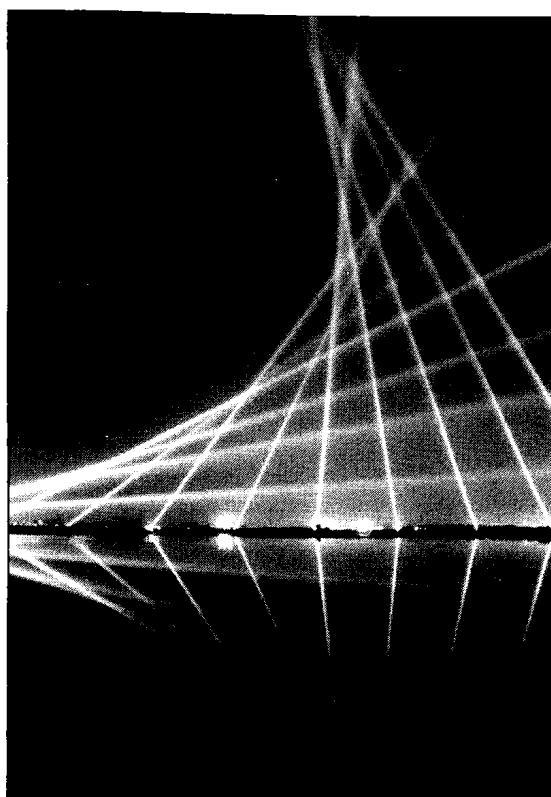
- Add another phone line (and the required communications hardware to go with it). This will let us get back to communicating with other computers at any point during the day, thus allowing us to get e-mail and news as soon as it becomes available.

After all this explanation, one important question remains unanswered ... "Why?" Well ... because? Not really a satisfactory explanation. When it comes right down to it, we want to help people keep in touch with each other. Until I graduated college and settled down in southeast Michigan, the longest I had ever lived anywhere was three years. As a result, keeping in touch with people is an important thing for me. If I can help other people keep in touch with friends and family, it gives me a good feeling to help. This is the reason I started the electronic mailing lists on angus.mi.org. We currently coordinate mass electronic mailings for seven groups.

I also am a news junkie. I like to keep informed and like to help others stay informed. Audrey shares my views on keeping people informed and giving them access to the electronic community. With her support and assistance, I am able to provide that access.

THE NIGHT THE BEAMS GOT LOOSE AT FERMILAB

Bill Higgins



The creation of Charles Derer, this light sculpture was erected at Fermilab using 12 carbon arc searchlights set up along a one mile stretch of road. Aug. 12, 1983.

Back in August 1983, Fermilab hosted a big international accelerator conference. As part of the celebration (which included buffalo-steak barbecues and such) the lab funded Charles Derer, a local art professor, to create a strange "sculpture." He called it "The Parabola Project."

He rented twelve searchlights, the kind you see sweeping the sky at car dealerships or shopping-mall openings. He stationed them evenly along a mile of road on the Fermilab site. I guess he had radios to coordinate the operators.

I went to the lab to see the display, taking Steve and Carol Johnson, who were visiting me just then. It was impressive to see twelve searchlight beams flailing wildly around the sky. After some while of this, Derer got his beams pointed in a configuration where each beam was a tangent to a parabola (remember "string art?"). The effect is of a complex web of straight lines that mysteriously create a smooth curve in the sky. It was a giant, rigid, glowing, intricate object rising above the lab in a vertical plane. Really cool.

The next day I went to get a haircut. The hairdresser asked me what the heck was going on at Fermilab last night. It was only then that I realized that she—and probably hundreds or thousands of other people—had seen this weird sight in the sky without knowing that it was art, or even that someone was doing it deliberately. With a lit-

tle imagination, one could conjure up all sorts of horrible radioactive disasters! I assured her that it was just for decoration. But I often wonder if anybody else was alarmed that night...

TOM SWIFT AND HIS ELECTRIC DUCK

Dermot Dobson

A few years ago, I was looking for something in the yellow pages directory and saw an entry for "The Decoy Duck Sanctuary;" they never did answer the 'phone when I called, but curiosity was aroused and so Doris the Duck was born. Doris was a hand-painted plastic decoy duck with 3-channel radio gear fitted, nicad cells and a medium power electric motor. In use she could do about 3 mph unencumbered (half that when towing a string of ducklings—question: Why are plastic ducks for the bathtub always made only in yellow?).

Her finest hour was on a spring Sunday morning in Oxford University Parks. Now children have been taken to feed the ducks here by parents and grandparents since time immemorial. I fitted a UHF receiver and loudspeaker inside, held a matching transmitter and sent her for a swim while I hid behind a bush. The total chaos caused by a duck complaining about the poor quality of the stale bread was a joy to behold. Eventually, I had to stop because my ribs were hurting so much from contained laughter that I was sure damage was going to result.

She was hydro-dynamically unstable, however. At full throttle she had a pronounced list to the right and in a sharp left turn tended to fall over with prop sticking up in the air and making a rather pathetic whizzing noise until rescued. (Even this instability was nothing compared to the difficulty of flying my short-lived radio controlled pterodactyl glider project.)

Electrifying plastic wildfowl had become something of a passion, however, and so the Gertie the Goose upgrade program was initiated. Gertie is much larger, and the greater battery capacity gives 30 min duration at about 6 mph. This is more than fast enough to chase foreign tourists when they hire a punt on the Thames in Oxford and rather unsteadily pole their way up the river. Her last outing, before chlorinated water put paid to the radio gear, was chasing noted SF author Ian Watson around the pool at a small regional con in Jersey a year or so back. She is now in for a refit and will get twin counter-rotating screws, when I find the time, and hopefully enough speed to employ a hydrofoil.

FIRST COME, FIRST SERVED

Todd Johnson

Living in Houghton during our college years meant being isolated from many sources of techie supplies. In particular, Plexiglas was hard to come by in reasonable thicknesses and colors. During term breaks, Al and I would search our respective home towns and surrounding cities for such goodies. During a trip to Grand Rapids I learned that our "territories" apparently overlapped. Visiting Cadillac Plastic to have a look at the scrap acrylic bin (\$1.00 a pound) I began to look for small slabs of the coveted black plexiglas. I found some red (I'll use it for LED displays) and some 1/2" clear (I'll use it for... well, something) but there seemed to be a real shortage of black. Finally I was almost at the bottom of the bin when I spotted a sheet with dark looking edges and writing on the paper masking. I pulled it out and beheld the message: "Oh, alright, here's some black, Todd!"



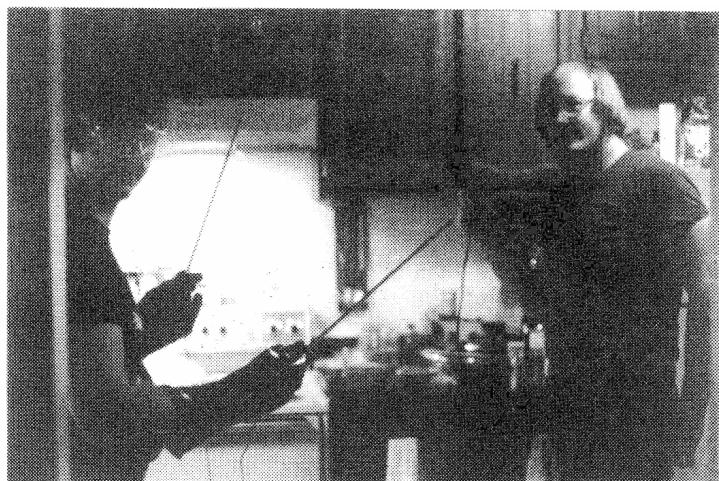
THE KILOVOLT TWO-STEP

Todd Johnson

Once while living in the dorm, Cap'n Al decided to fire up one of several 12 volt powered Helium-Neon lasers we had. The problem was that none of them were, well, assembled as such. There were power supplies and tubes available, though, and a few clip leads later an operating laser was born. It was running off one of the ubiquitous Gates batteries he had around, so it was essentially portable. It would have been more portable if all the parts were physically mounted to something though. Deciding to shine it down the hall, Al carefully scooped up the battery pack under one arm, held the high voltage supply in one hand, and the tube in the other. He carefully walked into the hall with his glowing payload and began playing the bright red spot along the far wall. Suddenly Al's demeanor changed and the laser began to flicker. A short had apparently developed somewhere and the high voltage was occasionally choosing him for a path rather than the laser. Al did a desperate sort of dance back into the room, not wanting to drop the tube and smash it. He managed to get it over one of the beds before he let go, and it dropped safely to the covers. Al was quite shaken by the ordeal but we all had to admire his control. Someone else who shall remain nameless had a similar accident that same year, but the current caused his arm to jerk, flinging a 5 milliwatt hard-seal laser head across the room to land with a sickening crash.

LOATHE THY NEIGHBOR

Todd Johnson



Dave Ifversen and Todd Johnson attempting to make the neighbor's stereo go out with a bang.

Living in an apartment for several years, one develops techniques for dealing with neighbors of all sorts, and one year we had some real gems. Three college guys who liked real loud music at 3 AM and assorted parties which frequently spilled into the hall on weekends. We focussed our attentions on the stereo. I borrowed some equipment from a friend and set up a small 5 watt transmitter and audio oscillator in the workshop with a long piece of coax running into our bedroom to an antenna hung on the wall separating the two apartments. Whenever we were awakened in the wee hours, I'd just walk into the workshop and turn on a power strip. The thumping bass line coming through the wall would suddenly give way to a soothing 120 Hz buzz, accompanied by faint cursing. I don't know if I ever managed to get him to take his receiver in to the repair shop.

Later that year, a neighbor on the other side of us began playing very loud, er, ethnic music to the point where the stairwell windows rattled. This looks like a job for... an FM transmitter! I dug up an old FM wireless microphone and tuned it to the same station he was blasting using a clock radio in the bedroom as a test. Using an FM walkman radio, I tuned in a good Gospel station and placed the headphones over the wireless mike, carried the assembly to the adjoining wall and flipped the switch. The thumpity-thump bass line was

suddenly replaced by a loud nasal voice saying something about redemption. The neighbor then began to comment loudly but unintelligibly on the sudden change in programming, and the stereo was turned off.

Another attempt at stereo wars involved testing an effect we had heard legends about; that if one induced sufficient power line spikes, you could damage the speakers or amplifier finals of a stereo running flat out. One particularly noisy day, Dave Ifversen and I decided we HAD to try it. We got a pair of rubber linesman's gloves, and a length of line cord soldered to two 18 inch brass rods. Dave held the rods in his gloved hands as I plugged the cord in, then averted his face and struck the rods together. Lots of sparks and several attempts later the music still blared, but we had enough fun trying to spike the line that we didn't really care so much anymore.

JOHN'S LUNCH

Fred Robinson

...was being stolen. Living off campus as we were, it was generally cheaper (and probably healthier) to brown-bag it rather than buy something at the Union snack bar. We (i.e., PFRC and related persons) hung out in the Union's commuter lounge, dubbed the Rubber Room because of the blocky plastic chairs, tables, and couches installed therein. There was a windowsill that was used as an impromptu refrigerator by those who brought in their eats. John's lunch had turned up missing several days running.

Rewind back several months: Our housemate Larry turned up something interesting in his room. Larry was not the neatest of persons, a characteristic which sometimes lead the rest of us (John, Tim, and myself) to bitch about it. But as it turned out, this time it played right into our hands.

As students, we bought cheap margarine in 2-pound tubs, and kept the tubs and lids for use after they were empty. Larry used them for cereal bowls. His discovery was such a tub, still containing milk and unfinished cereal. A couple of days after he'd stopped eating it, he'd put a lid on it. By the time he found it again, some interesting things were growing in it. We decided to conduct an experiment.

A raid on the fridge produced some slimy diced ham that had been forgotten and some expired mushrooms. In they went. We plopped the lid back on and let the Tub sit and incubate. After some weeks, Tim became brave enough to look inside. It was something he immediately regretted. The Tub was banished to the front porch, where it sat for a while longer.

Then the John's lunch started disappearing. After we heard the problem, someone remembered the Tub. We looked at each other with fiendish expressions. The vote was 4-0 to bring the Tub into play.

So John switched from brown bags to margarine tubs for his lunch. After a day or two, the bait was taken. This continued until John brought in the Tub. For some reason, the thefts stopped immediately after that (said with an innocent look upon the face).

A day or two later, the story got around to Nikki, Ann's (Larry's girlfriend) housemate, who also hung out in the PFRC corner. She reported that a guy in her early afternoon class that day had opened up a margarine tub, gasped, closed it, and ran out of the room, white as a sheet. I forgot if he came back

to class that day. The Tub, unopened, was consigned to the wastebasket...

The laughter was incredible.

RUN LIKE A BUNNY

Mary Lynn S. Johnson

Every once in awhile, a person happens on a bargain that is just too good to be true. You know how it is. You find some incredible bargain and once you've paid a price you're sure must be a mistake, you gleefully run away with your treasure, sure someone's going to stop you before you get safely away. I've had a few of these happen to me over the years and here are three of the best.

The Blast Box

A long time ago, Todd had gone with his parents to an antique shop near their home. Todd found a plunger-type blast box there, but could not convince his parents to give him the money for it. They said he'd have to earn the money and come back for it when he had enough. Sadly, after finally getting enough bucks together, they returned to find that the blast box had already been sold. Todd was pretty disappointed.

Well, about four or five years ago, he and I were at the local Sante Fe Hamfest. I knew of Todd's long search for another blast box and was surprised to spot one behind one outside dealer's table. I asked the dealer if it were for sale. He replied that he was thinking about it. He'd just purchased it that morning from another dealer for \$40.00. Now, I wasn't at all sure I could convince the guy to part with it since they are very rare and hard to come by. But, I offered him forty-five dollars anyway, just to see if he'd go for it. He said he'd think about it and I told him we'd check back with him later.

We returned to that same table about 45 minutes later only to find the dealer's wife and brother manning the table by themselves. I asked the wife if she knew what her husband's decision was in regards to the box. She said that no, he hadn't decided. The dealer's brother piped up at that point and said for her to go ahead and sell it to us, "What the hell?" The wife hesitated and then smiled.

"Oh, alright," she said. "He probably doesn't need junk like this lying around anyway." I hastily peeled off the \$45.00, thanked them profusely, and handed the box to Todd. We turned around just in time to come face to face with two guys that work with Todd at Fermilab. They took one look at him with his prize and their eyes got really big and smiles slowly spread across their faces. As we scampered past them on the way to the car, we heard them softly say, "Oh... no!"

Needless to say, Todd is extremely pleased.

But I can't help but wonder what happened when the dealer got back to his table...

The Atari 800

Now, I know I might hear a few snorts of elitism from all you guys with huge mega-computers, but it wasn't all that long ago that Commodore 64s and the Atari line of 8-bit computers ruled the popular market along with the TRS-80, the TI-99-4A and so forth. So just bear with me. I still consider this event to be pretty remarkable.

As an artist, I've been sent gifts many times by fans of my works. One guy sent me japanimation video tapes, one sent me his entire collection of D&D stuff, some send stuffed toys or action figures. But the one that beats all came from a young man in Colorado Springs who, while talking with me over the phone, told me that he was considering selling off his old computer because he was getting a new one. Jokingly, I told him that he could always send it to me. Up until then, I'd played with TI99s but with limited success. Other than that, I didn't really have a computer to speak of.

I didn't realize though, that he'd taken me serious until several days later, three **HUGE** boxes arrived on my doorstep, brought up three flights of stairs to our apartment by a red-faced and grouchy UPS man. Stunned, I dragged them inside and found that I'd become the recipient of an Atari 800, 2 enhanced drives, a printer, a modem, joysticks, and hundreds of disks, game cartridges and books! Each box had been professionally packed and were even sealed with shock detectors. Man, it was like Christmas!

When I called to ask why he'd sent it, he simply said it was a gift. Bear in mind that I'd never met him! I just hope I was able to thank him enough. I did send him a nice large piece of art later. Since that time, I've aquired another drive, a better modem, and currently use a heavily modified 800XL for virtually all my communications and records storage. Hey, although my machine does everything that I currently want it to do, you'll be happy to know that Todd and I are thinking of buying a bigger one, brand new even.

Since then, I've had other computers bequeathed to me, usually because someone is upgrading and doesn't want to sell it but wants it to go to a good home. I think there are six or seven of them in the house. But I still use the XL because of all of them, it's very user-friendly. And besides, I found a backup XL new in the box at a second-hand store for \$7.50. They were having a half-price sale that day.

The Kodak Pageant

When Mike Jittlov made his memorable trip to the Upper Peninsula of Michigan a few years ago, he told us that he would only show his films through a projector that he'd brought with him. His much-travelled Kodak Pagent 16mm projector is the only machine he'll trust to run his works on. Ask Cap'n Al sometime what happened when he ran his copy of *Animato* through a Singer projector. Brrr!

While perusing the ads in the local want ad paper, Todd spotted an ad for a Kodak Pageant for \$125.00. Knowing it was a bargain price, he called immediately, and we went down to see it that evening, armed with enough bucks to buy it if it were in decent shape. We were stunned, however, when the seller showed us the machine in obviously spotless, near-new condition. I was amazed. I had expected one that would look used, or perhaps would need a little repair. But not a new one being sold for about a quarter of its value. When we offered him the money though, he said that the ad was wrong. I expected the worst. The seller then told us that the price was really \$150.00 because some films were included in the deal and could not be separated. Needless to say, we bought it anyway. We later sold the films for \$30.00, so we felt we'd made out pretty good.

Now having followed the lead of Mr. Jittlov, we have our own projector which will be the only way we'll show any of our collection of Jittlov films. So far, it has performed flawlessly.

READ THIS BEFORE IT'S CLASSIFIED

Bruce Schneier

A new periscope detector:

Imagine a periscope as an antenna sticking up from a conducting plane. It has a resonant frequency. If you hit it with a smear of frequencies it will return the resonant ones big-time. The scope is like a ball (or a tuned circuit—choose your analogy). The ocean, on the other hand, has no tall narrow structures to resonate. If you get a resonance, then what you are looking at is man-made.

The above is great if you can be sure the periscope's resonance frequency is within the band of frequencies you transmit. New impulse radars which send out a single cycle can shove out energy at a lot of frequencies. This is needed since you will never know beforehand how much scope the bad guy is going to stick up. (The resonant wavelength is four times the length of the scope.)

There are wheels-within-wheels as one makes this idea more real and less ideal. However, all other methods of detecting periscopes don't work at higher sea stacks because of clutter: spikes in the return that are hard to distinguish from the small radar return of a scope. On the other hand, when you catch a resonance you can bet it won't stay at the same frequency, since the swell will change the length. The resulting modulation of the resonance (over a number of swells) will be absolutely unique to a periscope return.

THE ADVENTURES OF DAVE IFVERSEN

Dave Ifversen

In the Dorm:

Neighbors and roommates can sometimes be a pain. Our next-door neighbors in the dorm had a roommate who was a total loser -- this guy had too many bad habits to even begin listing them. Naturally, his roommates turned to us, the floor techies, for help. We hooked a 12 volt battery up to a switch and stepup transformer, camouflaged and ran the wires through the wall to the next room, and connected them to an interlaced grid of wires placed between the mattress and bottom sheet of the offensive person's bed. His roommates would signal us when he went to bed, and we would flip the switch a few times, just to get his attention. For two weeks

(until he found the setup on his bed) he swore that something bit him each night at bedtime.

The Saturday Evening Dessert Club:

Most Saturday nights in Houghton found a group of us going to dinner at the Library Bar after the PFRC science fiction club meeting. Afterwards, we would usually go to my place for homemade dessert. We started calling ourselves the Saturday Evening Dessert Club, and the "members" of the group would all contribute something to the party (and to our waistlines, since we all liked dessert). Everyone, that is, except one of my roommates, who did not want to contribute anything, but would wait like a vulture for us to come in from the Library with our food. Once or twice would not have been a problem, but he did this every stinking time. As a matter of fact, he started eating any food in the apartment, no matter whose it was. He even snagged someone's breakfast off the stove while it was cooking (when he thought no one was looking). Polite hints to him did no good. Direct confrontation also did not work. We decided enough was enough. The next Saturday, it all came together. The offensive roommate was not going to be home until very late that night. Someone brought a bottle of alum along with a coffeecake. We very carefully cut two pieces out of the cake and soaked them in a supersaturated solution of alum and water. We then set the oven on low and dried the pieces until they looked and felt normal. We put the pieces back into the cake (with much maniacal chuckling) and waited to see what happened. Late that night, after everyone had gone home and just before my other roommates and I fell asleep, we heard him come in (insert suspensful music here). We heard a quiet rustling in the wrappers of the leftover party desserts, much like a mouse might make. We heard him remove the covering from the coffeecake. There was a moment of silence, then a horrible gagging noise, followed by a mad dash to the bathroom, where he spent the next 5 minutes rinsing his mouth out with water. The next morning, our wonderful roommate started to throw out the coffeecake, asking if we were satisfied with the "joke" we pulled on him. We looked at him blankly, enquired what he was talking about, and then I grabbed a (non-treated) piece of cake off the tray and ate it. The look on his face was priceless. After that, he would rarely eat anything left in the apartment without asking first, and he would actually bring something to the party when he wanted to attend.



Mike Jittlov and his tour guides at the scenic overlook in Hancock, Michigan.

The day I almost killed Mike Jittlov:

Not really a techie story, but it does involve GT members and a major Science Fiction/Techie Type personality. Mike Jittlov was something of a cult hero at Michigan Tech in the early '80s. PFRC would run his short films before some of the movies shown on campus. One year, PFRC sponsored an appearance by Mike at the Tech Arts Festival. Since many of the officers and "inner core" of PFRC were members of the Saturday Evening Dessert Club, it was only natural that that organization took care of Mike's food and entertainment while

he was our guest. To that end, I signed out a vehicle from the University motor pool -- one of the old Public Safety (campus cops) Jeep Wagoneers -- so that we could show Mike some of the sights of the Copper Country. While driving up one of the steep, twisty streets in Hancock, Mike asked to be let out so he could take a picture. I stopped, he got out, and then I drove the rest of us up the street to find a place to turn around. The only good place was around a curve and quite a ways up the street. I turned around and drove back down the hill. When I came around the curve (somewhat too fast, I will admit), we saw a chilling sight -- Mike lying sprawled in the middle of the street, pretending that he had been hit by a car (jolly joker...). My right foot, of its own volition, pushed the brake pedal all the way to the floor. All 4 wheels locked up, the vehicle started a slight sideways drift, and time slowed down. Panic and/or adrenaline induced time dilation is a nasty thing. The mind has all sorts of time to think about things, but the body will not respond. What happened went something like this:

-- TIME DILATION ON --

"Oh shit. Wait, we're sliding. Why? Check with the right leg -- yep, it mashed the brake pedal to the floor. Will we stop in time? (Momentum vector equations. Coefficient of friction of tires sliding on sand covered asphalt.) Why are you thinking about physics at a time like this? Check back in with the right leg. Knee still locked rigid. Plead with the right leg to release the brakes, giving at least a little directional control to the vehicle. No such luck, the right leg says we're on our own with this one. Glance at the other people in the car; see horrified expressions all around. Notice people clutching chests due to cardiac arrest. Close eyes and wait for the sickening thump. Wait, we've stopped. No thump. Open eyes, but don't see Mike anywhere. What happened?"

-- TIME DILATION OFF --

Mike jumped up from right in front of the grill, smiling like nothing had happened, wanting to know if he had fooled us. Ack! To this day, I don't know if Mike knew how close he came to really being hit, but I do know how close I came to being known in Fandom as the person who killed Mike Jittlov.

The further adventures of Mike Jittlov in the Copper Country: (or, The Saturday Evening Dessert Club rides again)



Doug Ifversen braves a serving of Kung Pao Chicken.

A subset of the Saturday Evening Dessert Club decided to cook dinner for Mike one of the days he was visiting. Homemade stir-fried chinese chicken, homemade eggrolls, homemade dessert. One of the ingredients for the chicken was hot chinese peppers. Really hot chinese peppers. Unbelievably hot, almost radioactive chinese peppers. The sort of thing banned by the Geneva Convention. Nobody told us that this stuff could have been used by riot police to disperse unruly mobs. As soon as the peppers hit the hot oil in the wok, all hell broke loose. People made a mad dash for any exit, coughing, choking, with burning, watery eyes. My brother Doug went carefully back in, wearing an army surplus gas mask, to open windows and doors in an attempt to vent the hazardous fumes, and to finish the nerve gas generating portion of cooking dinner. Even so, it was several minutes before the atmosphere in the apartment would support life again.

Fun at work:

At the large government lab where I work, the crews in my group all work a rotating shift. We sometimes try to outdo each other with practical jokes, especially after a long midnight shift. It was a very slow night, so my crew decided to "get" the next crew. We made up about a dozen "beepers" -- a 555 timer driving a sonalert, set to beep for less than 1 second every 5 minutes or so. We hid these all over the control room, and started them off at 30 second intervals. Every 30 seconds, a short piercing beep would sound from a different place in the control room. Since the beeps were short, the crew on shift could not determine where they were coming from, and they just had to put up with the whole thing, until we came in to relieve them that evening.

WHY I SWITCHED TO RETRO TECH

Jeff Duntemann

Look there. On my desk. It's an FM radio--no, that *other* FM, the one you don't say in front of the kids. It's an ICOM 729. It's smaller than another favorite tool of mine--the dictionary. It receives continuously from 500 Khz to 30Mhz, with another band from 50-54 Mhz. It transmits on all ten of the amateur radio bands from 160 meters (1.8 Mhz) to 6 meters (50 Mhz) putting out as much as 100 watts, depending on the band. It emits CW, SSB, AM, and NBFM.

How does it work?

Lord knows. I peeked through the slits in the box. I wouldn't dare open the damned thing up!

Yup. An FM radio.

But boy, does it work. And that's what I bought it for--reliable wide-band receive, and all the ham bands up through six meters. If I really hafta work Outer Slobovia, this is what I'd use, and I'd probably get through without any trouble. But is it any fun? Sometimes I wonder.

So let's go out into the garage. Good grief! There's a Collins 75A-4, four cubic feet of tubes in a solid steel box: the finest receiver you could buy in 1957. Weighs about forty pounds. In most respects, the Icom puts it to shame. But the technology is straightforward, parts are still available, and the components are more than big enough to see. If it breaks, I can fix it--I have three beer-boxes of tubes on the big shelf--and fixing it would be *fun*. I got it for 40 bucks. Needed some cleaning and a little repair, but it works fine now.

Over there is a Heath Comanche receiver that I paid \$30 for. Plugged it in and the main filter cap exploded. Lovely smell; haven't smelled quite that smell for years. Took me ten minutes to yank its case, snip out the corpse, and splice a new one in: I didn't even need to crack the manual. Works beautifully, and it hums purposefully as though something is really going *on* inside. Some radios you can't tell if they're alive or dead--not mine.

And transmitters! I have a Hallicrafters HT-37, bigger than the 75A-4 and weighing more than fifty pounds. Works fine; paid fifty bucks for it and never had to lay a hand on it. The Heath Seneca transmitter isn't quite as big and I haven't tried it yet. Maybe it'll blow up...but if it does, I'll call it cheap entertainment and make it work again.

There's eight or ten others on the shelf, but let me get to the point. Back in 1975 when I helped found GT, we were in the technological

equivalent of Tolkien's First Age--the air was full of wonder, and everyman his own Feanor, forging Silmarils out of LEDs and little black chips that had not yet become household icons. I wire-wrapped two whole computers, and wrote binary machine code in my head. It was a wonderful time, and out in a cardboard box in the garage are many of the silly little things I built and was proud of and will never throw away.

Somewhere along 1980 or so, practice hurtled past us and didn't even wave. Inside the ultraminiature HTs you buy today are one or two monster flatpack chips and a hybrid RF power output module, set in a cubist panoply of chip resistors and chip caps, the whole PC board maybe two inches square. It's a wonder, but in the museum sense--look, but don't touch. You don't know--*can't* know; so soily, patent pending--what goes on inside those chips. So at some point I get bored, close the box, and take it for granted. That's about the only way I *can* take it.

Hey, there's no joy in just *looking*.

I still work in ICs, but in a minimalist sense. No more stringing dozens of them together. I make single-chip receivers out of the NE602, or the newer Motorola MC3362--but even that has the taint of boredom to it. You have to make the circuits just so, as they tell you in the chip spec, or nothing works. There's not a lot of slop in these chips. They do one thing one way, take it or leave it.

For pure protean versatility, it's hard to beat a 12AX7. Amplify, oscillate, modulate, what'll it be? After I got laid off at Borland I spent a month building radios out of tubes. It was fabulous! I didn't need a tweezers. I had room for my fingers. And all the parts were general-purpose thingies I had been hoarding for years in milk cartons. No scouring the earth for just that same exactly *right* DSP superchip. The results were radios that were big, and heavy, and went *thunk!* when I whacked them down on the bench. But they bring in signals too, and while any of my modern-day Pacific Rim receivers are vastly better, I didn't build those, and as technology they've become just a little bit boring.

I confess I was a little surprised at myself, who had always assumed it was better to be on the leading edge of things. On the other hand, if truth be told, the hardware leading edge had been way, way out ahead of me since the mid-80s. Despair? Or find my own level?

With my head, I followed the software leading edge, and that's how I make my living. With my hands, well, I do what pleases me, and what pleases me is the scale on which things were done in the late Fifties and early Sixties, when resistors were half-watters and mica caps were the size of postage stamps. I can sneeze at my bench and not blow a fortune in parts off into the four corners of the garage. All the signal paths are easily accessible with an oscilloscope probe.

Perhaps the most important factor is this: *Almost nobody is doing what I'm doing*. That's how it was in 1975: Almost nobody was creating Trekkie blinkers and marquee LED medallions, so we did it and it was awesome. Today that's dime store stuff on the low end, and off-the-shelf consumer electronics on the high end. Why do what the Far East can do far, far better than I could ever dream of doing? So I've turned 1975 on its ear, and what I'm doing is awesome because it's become a lost art. Working my Fifties radios is like stepping into an old movie. They buzz, they crackle, they glow softly through the ventilation holes and make orange patterns on the shadowed walls. They've become *fun* again.

I'm gathering my notes into a book I hope to publish someday (and now that I own a publishing company that's more than just a fever dream) called *Junkbox Radio*, in which I hope to capture that fun and pass it along to those who might want to dabble in a little Lost Art themselves. If you'd like to see a little *Junkbox Radio* in *PyroTechnics*, let Mary Lynn know, and I'll warm up the tubes for you.

WEASEL-RATS

Todd Johnson

At a New Year's party several years ago we had a '60s dance. Tie-dyed clothes, flowers in the hair, even draft card burning was featured. Alex Ellingsen and I decided we needed a light show to complete the effect, so we kluged one together in about 20 minutes. Alex rounded up a small laser which we mounted in an equatorial telescope mount on a tripod. The laser was a lot smaller than the scope had been, so we shimmied it up by wrapping lots of TP around the laser (we were in a hurry, OK?). We glued a small mirror to a sheet of plastic wrap and stretched it over one of the speakers, and

aimed the mirror at it. This produced a decent squiggly display on the ceiling, but eventually another feature was added. Bill Higgins recalled playing with a laser and a small fan in my workshop weeks before, and found himself inspired to add to our crude apparatus. His plan required the laser to be aimed horizontally, so he conned Bill Leininger out of his pocket mirror and taped it to a meter stick. There was no easy way to mount the meter stick to the apparatus, so it was held down on top of the speaker by an iron frying pan procured from the kitchen. The laser was now projecting its pattern horizontally and Bill could effect his plan. We took a 20 inch box fan and removed the guard from one side. The laser pattern was then aimed into the fan, which swept out a Z-axis as the mirror scanned X and Y. This resulted in a 3-D pattern floating in the fan which was pretty impressive for a quick kluge.

Several weeks later, Bill sent me a clipping from a computer industry magazine containing an article on "TI's new revolutionary 3-D laser display". It looked REAL similar in principle, but they didn't have the cool looking telescope mount or the frying pan. Phooey.

FRESHMAN LIGHT & MAGIC

Todd Johnson

Our freshman year, Cap'n Al and I somehow got involved in a rather ill-conceived video production project (a story in itself). As we were the special effects crew, we had an excuse to get a faculty-signed slip to get supplies from the Chemistry Department stockroom. The Director wanted some flashpots so Al purchased the necessary materials, including a pound each of potassium chlorate and magnesium dust. The chlorate was ground all by itself (to avoid repeating something Al's dad had discovered years before) and mixed with the powdered magnesium. The batch was stored in 35mm film cans separated from each other in case one can got any ideas.

This material was a great source of amusement, and we experimented with several different uses. One popular technique was to take a foot or so of lamp cord and extract a single strand of fine copper wire. This was then stuck down along the center of a length of 2 inch wide masking tape. The flash powder mixture was then sprinkled onto the tape along the wire, then the tape was folded lengthwise, sticky side in. Short lengths of heavier wire, perhaps resistor leads, were attached to the ends of the fine wire, then stuck in the end of an extension cord. We lowered the cord out the window for several feet, hopefully stopping short of the windows below, then plugged the extension cord in. The bang and flash were most impressive.

STARS IN THEIR EYES

Andy Anda

For the longest time, I didn't think that I had a noteworthy anecdote for this Pyro, as whatever I've done lately has been off in Matrix Land (TM) and is of little general interest and will soon be available in a dissertation that is currently vaporware. And nobody really wants to hear my stale sour grapes about incompetent science fair judging through high school. However, I do remember a wonderful evening of scientific recreation. It was my senior year of high school, and I organized a star party (herding together to gawk at the heavens) for the folks in my high school astronomy club. Being fortunate to have access to a car, I went around picking up all the membership that was interested. Somehow we managed to fit into a rather compact four door Ford Maverick close to a dozen high school students, eight inch and six inch Newtonian reflector telescopes, and various small refractors, binoculars, and books. I can still hear the protesting yelps made by John Baskin, wrapped around a telescope mount, whenever the car communed with a pothole. Living in the City of Chicago, I had to find a suitably dark area for viewing that wasn't too far away. I decided upon a forest preserve on the far North side of the city. When we arrived, we recreated the clown exodus from the small car skit. It was soon dark enough for good viewing

and we set up the equipment and proceeded to have the star party. In my innocence, I did not know that as darkness falls, the parks become infested with the human creatures of the night that one would feel uneasy around under the noonday sun: druggies, bikers, and an assortment of other hooligans. Our star party started attracting these potentially dangerous creatures like moths to a flame-leather moths--with chains. In our ignorance and innocence, none of us knew that we should have been highly apprehensive and beaten a hasty retreat. Instead, we with great enthusiasm became tour guides to the magnified wonders of the starry night to all who arrived. That's when the magic occurred. All of these tough characters became like children in a science exploratorium, with lots of enthusiasm, wonder, and questions for us naive nerds. By the time the park rangers chased us out of the closed park ("Honest, officer, we didn't know the park closed at night."), everyone had had a great time. Surely, there are morals for the picking in this anecdote. But it was one of my first inklings that science can have a universal appeal if packaged properly. Someone along the way dropped the ball and failed to hold folk's interest in science in school. But you don't want to hear my science education diatribe and polemic--I'm sure you've one of your own.

(RETRO) REFLECTIONS ON MY YOUTH

Al Duester

The Laser! One of GT'ers favorite toys. We were some of the earlier folks to discover laser-guided cats as a form of entertainment. Nowadays, it doesn't take an armful of aluminum and batteries, anyone can buy a pen pointer from COMB for \$70 and have just as much fun.

But back in the old days, when it was safe to shine a laser off the roof of a building without expecting a sudden return of automatic weapons fire from the local gendarmes, we used to have lots of fun with laser guided drunks, too.

At an X-con that was held downtown in Milwaukee, a gal by the name of Mary Lynn was doing security. Senator Proxmire was going to show up, so there were worries that someone would actually try what we all wished for. It was the time of roof parties. (In fact, during the prior year's roof party at X-con, I saw a bolide pass overhead and break into 3-5 distinctive pieces. Pretty amazing, as there were only about a dozen stars visible through the haze.) PFRC had been helping out with security. Several of us went to the roof to celebrate and wind down. Lasers were standard equipment. We looked up the street, and illuminated a stop sign. We looked down the street, and saw a boosted car doing more than the legal limit. As it passed us, we lit a speed limit sign with red flashes, and the car screeched to a slower speed. We could imagine the occupants searching in vain for the police car.

Later that evening, a drunk wandered to the curb at the intersection below us. He stepped down, up, down, up, never really figuring out what the traffic was doing. A red spot on the pavement served to attract his attention, and he followed it, stumbling. When the light turned in his favor, we slowly marched him across the street in safety, before the spot leapt away too fast for him to follow.

Blaster building was also a popular pastime in the good old days. I developed a method of making handles for blasters that involved softening PVC or ABS sewer pipe in either boiling water or an oven, then clamping it to an oval cross section to provide a comfortable grip. Water tended to haze the surface of the plastic, so oven baked was preferred. I doubt Todd's Mom would have appreciated our baking PVC pipe in the oven, but then we didn't tell her that was what we were making for dessert that Christmas vacation.

Minicons have always held a special place in my heart, as it was usually when we would wander down from the Upper Peninsula of Michigan, and experience warm weather for the first time in the year. I've been at Minicon wandering around Minneapolis in a T-shirt. Of course, I've also been standing on glare ice on the roof of the old Leamington hotel. In the Radisson, it wasn't as simple a trip - out a window onto a

fire escape, and the last floor via an open ladder to the roof, with a 9 story drop just to the right of the ladder. But once up there, there was a view far around.

With that in mind, Bill & I wandered over to the nearby bank with a large tower on the roof, armed with a few corner reflectors (bicycle reflectors purchased that morning at a local surplus outlet) and a roll of electrical tape. We wandered in to the lobby early on Saturday morning, walked over to the bank of elevators, and headed to the roof. Once there, we walked to the edge, and mounted one reflector on a flagpole. Then we climbed the tower. Yes, the weather tower on the bank got a reflector mounted about 2/3 of the way up. Later that evening at the party in the consuite, we would be shining the lasers at them and watching them light up.

Unfortunately, the hotel was blown up the year after that, and the new Minicon hotel does not have an appropriate tower nearby.

Minicon was also the place I once decided to test a theory - that GT was excessively cliqueish. In the Spring of 1981, prior to job hunting, I had a scraggly beard. We had been dumpster diving earlier in the year, and had obtained a black wig from behind the ROTC building when the theater group had been cleaning house prior to moving out of the building. Along with a large box of other possibly useful stuff we found, it went to Minicon for the potential need for costuming supplies.

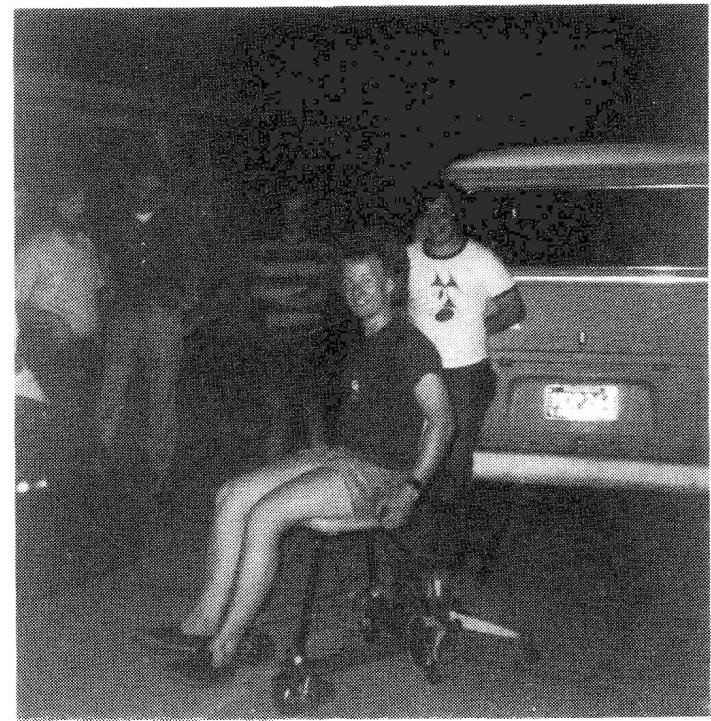
On Saturday evening, I shaved my beard off, dressed differently, put the wig on, and ran some black magic marker over my eyebrows (lacking any mascara). Then I went to the GT party, wandered in, and leaned against the wall in a corner. I did discover that nobody made any overtures to me, though several gave me slightly strange glances. Speaking up was out of the question, as it would have given me away immediately. But there wasn't any effort made to include me. After 10-15 minutes of this, Renee Sieber finally started staring at me and smiling, I smiled back, and we fed off each other until we were laughing out loud, and people were staring at us. At this point I removed the wig. No one was more surprised than Erin McKee, my girlfriend at the time, who had been less than ten feet from me from the moment I had wandered in.

Unlike Duane Corpe, I never once wore a miniskirt with that wig.

Spider Robinson has been honored by Minicon in the past. Sometime around 1978, he was Guest of Honor. I happened to be lucky enough to stumble onto the dead dog party where Spider was playing his guitar. After an hour or so, Spider mentioned that he was thirsty, and did anyone know of any beer available? Being Sunday night, nothing was open. Supplies had been depleted. There was no hope for refreshment other than the bathroom sink or the overpriced pop machines in the hotel corridors.

One certain techie, while helping clean up earlier, had seen a case of a local beer that had been left under a table in one of the ballrooms in the Leamington. It wasn't worth doing anything about at the time, but at midnight the thought crept into his mind that it might be worth checking out to see if anyone had forgotten it. I wandered down on my sacred mission, and found the ballroom deserted and unlocked. There, under the table, was the abandoned case of brew. I retrieved it, and carried it upstairs. With suitable flourish, I apologized for the warmth, and presented it to Spider. Two years afterward I overheard some people talking about someone who had "stolen" the concom's case of reserved beer for the dead dog party! At least most of it went into the GoH.

My berserkers are notorious for being under-attended, but one summer I did manage to attract a fun and sizeable crowd. This was in the early days of GT robot construction (now I get paid to build autonomous robots that explore the bottom of the ocean). Late afternoon and early evening consisted of us tying a car battery and some wheelchair motors onto a chair and making it go in circles in the driveway, in an attempt to find out if it had enough power to do what we wanted in a robot. There were a number of lasers and flash blasters in attendance, thanks to Tullio and a few others, so we decided



Al Duester test drives the motorized chair at his Holland Berserker.

to play laser tag, as it was nice and foggy out that evening. Eventually, the game wore down, and we switched to lighting off magnesium at the end of the driveway and targeting speed limit and the fire station signs down the road with the laser. Eventually the cops noticed as they were driving by, and stopped to investigate a bit. They seemed ready to get out of the car and play with it too.



George's dome home and the disassembly crew.

Ever disassemble someone's home? We brought down George Ewing's dome in Cheboygan one summer (we did wait until he had a place to move into!). Our only pay was the change we managed to sift out of the sand floor. During the day, we went to see the Soo locks and went fishing for seagulls (tie a length of monofilament onto a pretzel, and once they get airborne start restricting the release rate of the line trying to get them to stall in midair). And we slept in a giant garbage bag out back of George's new chalet that was kept inflated by a large fan. At least when someone hadn't tripped over the power cord to it while on the way to the bathroom.....



George Ewing's air tent.

Isn't it strange, how reactors you never knew were nearby always seem to leak glowing green effluvia on St. Patty's Day? Part of the problem is being out of the immediate area before the leak starts. A solution one techie found is to wrap the fluorescein in a few wraps of toilet paper, before dropping it out of a pocket. Enough time elapses so that you can leave the immediate area before coloration begins.

Guy Wicker started his career of attempting to kill himself and others long ago. His most insidious attempt was the series of flash blasters he built for Stage Wars, when PFRC put it on at Michigan Tech. The wires were only twisted together, and were insulated with scotch tape. The blasters would tend to break every night or two, but Guy would have them all working before the next evening's performance. Amazingly, nobody was electrocuted. But several of the actors probably still have retinal burns from the megapower strobe I built for use during the hyperspace transit "special effect".

Of course, Guy isn't the only one guilty of failing to insulate high voltage equipment properly. One evening in Wadsworth dorm, a few of us were playing with lasers. I had my tube in hand, and battery, ballast resistor, and power supply connected via clip leads to a pack on my chest. The power supply was a 5 mA constant current supply, so when the cliplead sprang loose from the laser tube, it went searching for an appropriate path for current, increasing the drive voltage to 12 Kilovolts in an attempt to start the missing tube. My other arm was the location it finally found. I found that 5 milliamps arm-to-arm was far more effective than coffee at keeping you up at night (albeit slightly more dangerous to your health). I did manage to keep from crushing the tube as my muscles spasmed, and also managed to carefully put all the equipment down on the bed before disconnecting the battery and collapsing in a spasming heap.

I hear people talking about how GT has lost its direction and purpose. Not so. It's just that many of us now get paid to do what we once did as a hobby. GT got us there. Not only was the name impressive enough to let a high-schooler start receiving the no charge trade journals, but free samples as well. Personally, I find it difficult to drag the latest 1500 lb. oceanographic vehicle with me on the plane just to have around at a con. (Yesterday I was on TV news talking about the "Stirship Underprise", and today I'm giving a phone interview over a major Boston radio station. NCC 1701/B is stencilled on its sides, and it even sorta looks like the secondary hull of the Enterprise). Besides, it doesn't swim too well in air, and most hotel pools aren't deep enough.

I did once bring a sonobuoy to Minicon so we could disassemble it. A sonobuoy is a device dropped out of a plane that inflates a bladder on water impact, drops a hydrophone out its bottom, and starts retransmitting everything it hears over a radio channel. A useful tool for locating Russian subs, as everyone who's seen "The Hunt for Red October" knows.

We have scads of old ones floating around in surplus, mostly because they're a source of nifty hydrophones to play with on projects. I dragged one on the plane as checked baggage. There were no problems with that, though at the baggage claim on the other end, a handler gingerly carried it out of the backroom, stepping lightly and having a look on his face that made it seem he thought he was carrying an armed and primed nuclear device. But they gave me hell about the adjustable crescent wrench I was carrying (to disassemble the thing) in my remaining carry on baggage! I finally had to check the wrench with the pilot! We can all feel safe that airline security will keep terrorists from disassembling our aircraft in flight.

I was somewhere in another train of thought a bit back.... Oh, here it is... Back in the hot & heavy days of GT, I would always have my techie kit with me. Not just at cons, but anywhere there might be a problem that needed fixing. Whether it was the unexpected but opportune scrounge by the side of the road or industrial dumpster, or a damsel in distress on the interstate, my kit was there.

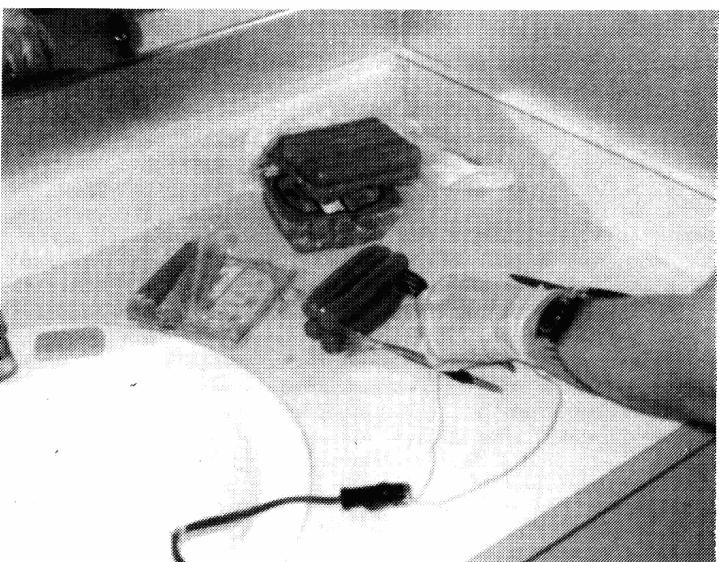
Thus it was, that while interviewing for a job at Woods Hole Oceanographic, I found myself in a small room, with a large but malfunctioning laser system. It was part of an ocean current measuring instrument under development. They apologized that it wasn't working, and so couldn't show it to me, but the power supply had blown out one of its high voltage capacitors that morning. No lasing for about a week while they waited for the new part. They had plenty of time to chat with me, as they were working on little side things till the cap came in.

It just so happened that my car was on the dock, my kit was in my car, and a high voltage capacitor was in the kit. Voila! Pretty red light once again. This impressed them a bit.

Needless to say, I got the job.

It was a deserted Saturday evening in Southfield, Michigan that Autoclave. We were sharing the hotel with a convention of Southern Baptists, but frictions were low because they were all asleep early (presumably to get up for morning prayer sessions) before the filkers started in with "Old Time Religion". Tom Snoblen had brought his little robot, and when it wasn't emitting sparks and smoke from the lengths of solder it kept eating, it was merrily crawling down halls and bumping into walls. In one corridor it was noisily making its way down, a door opened, and a family of black faces with biiig white eyes stacked itself six high from the floor to the top, youngest to oldest, staring at the monstrosity making its way toward them. They quickly pulled back in and shut the door before the robot got there.

Techies learn to cook in ways different than most folks. We had gone in costume to a showing of Star Wars earlier, and



Two forks, some clip leads and a zip cord become a makeshift hot dog cooker.

were hungry and poor. There were no open restaurants in the area that met our budgetary restraints, but there was a Krogers supermarket. We purchased chips, hot dogs, buns, and condiments, and returned to the hotel. There, some were puzzled about how we were to cook them. Once again the techie kit came into play. The clip leads, a length of zip cord, and rubber gloves came out, and with some forks the pound of hot dogs was being cooked directly from the wall socket. Get Bill & Barry to sing the song they wrote about the experience for you someday (it's funnier than the actual event). And don't try this at home - you're liable to burn it down and electrocute yourself if you don't know what you're doing.

At an Ishercon several years ago I decided to send up a report for the midnight celebration (not to be confused with last summer's berserker's setting off of a thesis). After many tests, timing experiments, and miscellaneous flashes, I assembled and cut the fuse. When the big moment came, everyone was counting down, and then started counting up. A cry of disappointment arose from the assembled multitude, complaining that the explosion had happened a second late - until BillEl reminded them that there was a leap second to be added that year.

Long before I joined up with General Technics, I was tinkering. First kid on the block to discover the baking-soda-and-vinegar-in-a-bottle-shook-up-makes-a-neat-mess-on-the-ceiling trick, etc. I used to play trumpet - first chair in the high school band. I built a synthesizer and played it a few times in pep band during basketball games. But there was always the marching in the Tulip Time parade. Hot. Uncomfortable. Heavy uniforms. But to be in the band the rest of the year, a requirement was to march in the fall during football games, and in the parade in the spring.

I decided to ease the burden. I had seen ads about these semiconductor cooling devices called Peltier modules. Pump in electrons, and the modules get hot on one side, and cold on the other. I managed to talk a company into providing me with two out-of-spec ones as samples to play with. I bent some copper tubing into waves and clamped it to the cold side. Then I bolted the hot side of the modules to my trumpet for the heat sink. A plastic tube ran down my arm to a 1 quart reservoir under one armpit, and my disassembled camera equipment went under the other. With my uniform on, it gave me the appearance of a very wide football player. The tube ran out from the cooler assembly and up to near my mouthpiece, and the gatorade came out cold, if a bit metallic tasting. This was one of my earlier discoveries that advanced technology is not always the appropriate solution to a problem. Eventually I decided on the low-tech and more appropriate method of pre-freezing the Gatorade into a slush in the bottle, and dispensing with both the batteries and the metallic taste. The tube was a short stub sticking out of my collar, so I could drink at any time instead of only when I had the trumpet to my mouth. It had the added advantage of making everyone (particularly the director) wonder why, at the end of the parade, all the majorettes ran over to me and were sucking on my neck....

In college, several of us worked on a rather bizarre attempt at science fiction movie making. We all got business cards for Barry Lee productions from the ringleader (complete with a rubber stamp to personalize them!). I was Technical Director. Yeah, right.... Never sure if it was really more than a cheap rip-off of "A Man Who Fell to Earth", our production "A Visitor to Bridges" was an interesting experience. We only got around to videotaping a few scenes before things fell apart. The first was a pair of detectives interviewing a professor about the supposed alien visitor, shot in an empty office in the EE building. I think Terry Anastasio and John Frambach were the detectives, while Bob Yeo played the professor. The other memorable one was a "major" special effects scene where the protagonist teleports himself to earth. We built the thought amplifier scene, complete with Krelling globes (borrowed frosted glass globes from some of the sidewalk lights around Co-ed hall that mysteriously appeared on the set one morning), and panels full of blinkenlights. The latter were made from a pair of surplus air force communication consoles I obtained at the Chassell hamfest. We laboriously wired all the banks of lighted pushbuttons in groups of pseudo-random-looking patterns, cut hundreds of individual 1/2" x 5/8" pieces of colored lighting gel, then wired them into a 32 step sequencer.



The movie set was primarily constructed of scrounged materials.

We replaced the tabletop panels with translucent white plexiglass, painted black on the bottoms except where we had placed a cutout of a hand to mask the paint, and stuck a lightbulb underneath. (That hand cutout with its label from the console "This telephone is not secure WARNING Do Not discuss classified information" still rests above my phone at home.) Thus, a parallel eerie glow would emanate from under the teleporTEE's hands when the globes glowed. A high-backed stool/chair borrowed (legitimately) from the Library bar served as the seat, and the subject wore a headband with the mental interface stuff - two short PVC tubes, with silver endcaps made from a specific antiperspirant's cover. As the thought concentration of the teleporTEE increased, the blinkenlights sequenced faster, the globes and hands Krelledd brighter, and the edit was supposed to switch to a scene without the him. I don't think it ever got that far in editing.

My script is kept in a locked location, with several warning labels, as it has been known to cause dementia in several readers.

Our foray into radio drama a few years later was slightly more successful, with an entire half-hour episode being produced. The story was Spider Robinson's "A Voice is Heard in Ramah...". We got to line a recording studio's corner with concrete blocks and smash old chemistry glassware in it for the sounds of glasses crashing into the fireplace at Callahan's Place. And Todd & Tom discovered the secret to simulating a good crackling fire burning down a house - potato chip bags being crinkled and recorded at double speed.

WD40 makes a wonderful dragon's breath when lit afire. Rumors have been around that it produces phosgene when burned, though several chemists have stated it can't be so, at least from the known ingredients. This we do know: You can burn through aluminum window screening with it, and if you paint with its sooty flame onto a wall, enough solvents remain to allow the deposited carbon to merge with the paint, permanently. There may still be an eight foot happy face on one wall in Co-ed dorm...

JUST A MODEL ROCKET

Dawn Kuczwara

While both Paul and I were attending Purdue University in West Lafayette, IN, we spent a lot of time visiting two of the guys that lived in Paul's dorm. Jeremy and his roommate Ian lived across the hall from the dorm counselor, or R.A. This fact never stifled Jeremy's adventurous and curious spirit. One spring, late afternoon, Paul and I were watching TV in Ian and Jeremy's room, while Ian studied and Jeremy experimented. Earlier that day, Jeremy had made model rocket fuel out of a few components bought at the local drug store. While the fuel produced a prodigious amount of smoke, it didn't have quite enough "kick" for him. Jeremy finally decided that melting it down into a liquid would produce the effect he was looking for.

So there he sat, at his desk, using the two bottom pieces cut off of Coke cans with a piece of sock stuck through one as an alcohol burner, and a crucible tongs, and glass stirring rod "borrowed" from chemistry class to melt the dry fuel into a liquid. This was actually working until Jeremy decided to burn some of the fuel, which had become stuck on the end of the stirring rod during the melting process, off the end of it. The flare up that occurred startled Jeremy, causing him to drop the flaming rod onto the crucible full of rocket fuel.

As if Jeremy had released a mighty djinn from its decanter, a lapping tongue of flame reached forth from the crucible and made an honest attempt to grab Jeremy's CD player and books on the shelf above his impromptu laboratory. A column of smoke poured forth, instantly filling the room. The smoke was so thick that I couldn't see the end of my nose, let alone see Paul running like a scared rabbit for the door; instead all I heard was a 'click' as he shut the door behind him.

Ian, assuming that Jeremy had ignited the fuel on purpose, let forth a stream of expletives as he bumped and fumbled his way to the door. Another 'click'. Jeremy and I, now in the room alone, decided the only way to get the smoke out of the room without the R.A. knowing, was to turn the fan around and blow the smoke out the window. This, of course, had to be made more difficult otherwise life wouldn't be fun, right?

The fan was hanging from the ceiling, by heavy wire, wrapped around itself several times. The fan was also running at full speed. We felt around Jeremy's desk for a few minutes, and finally came upon a pair of scissors. The scissors were effective in cutting the wire, and, without the loss of fingers, we were able to turn the fan around. From outside the window we heard Paul yelling "WOW!!!", and I ran to find out what was happening. Smoke was pouring out the window and out into the yard between the two dorms. We began to thank our lucky stars that it was dusk; the fire department was only a few blocks away.

After the smoke had cleared, Ian returned to his desk to study, and Paul and I returned to watching TV. Jeremy, however, like the many great aeronautical engineers before him, returned to the drawing board, or at least what was left of it.

EVERYTHING BUT THE KITCHEN SYNCHROTRON

Bill Higgins

The Bubbelkammerbilder and Me, or How I Got "Published" in Sweden

Not long ago, Magnus Olsson, a graduate student in physics at Lund University in Sweden, put a request out on the computer nets for information about bubble chambers.

Magnus wrote, "Bubble chambers are certainly not used

in the big experiments ('basic particle research') anymore, and haven't been for quite some time. A modern detector is a \$50M, thousand-ton combination of counters, drift chambers, calorimeters, and who knows what, all connected via an enormous amount of high-speed, radiation hard electronics to some powerful computers. Bubble chambers are steam technology compared to these monsters."

Well, I figured I know a thing or two about this subject, so I wrote Magnus a reply. (You can read it below.)

He thanked me and said he was about to teach his physics students at Lund how to analyze bubble chamber pictures—a standard exercise in modern-physics lab courses. Could he reprint my remarks in his lab manual? Naturally, I said yes!

A couple of weeks later a small document on European A4 paper appeared in my mailbox. It contained instructions, in Swedish, on how to measure particle tracks in bubble-chamber pictures (bubbelkammerbilder). At the end of it was a page in English, my essay recounting BC folklore. (I was impressed that Magnus could expect his students to comprehend colloquial English. Certainly American colleges can't count on such bilingualism in their boys and girls.)

Yup. I've recently worked in the control room of CDF. This stands for either "Colliding Detector Facility," the original name, or "Collider Detector at Fermilab," the revisionist Newspeak name that became official when somebody in the bureaucracy realized we weren't actually colliding detectors together. In either case, it's over 2500 tons, and somewhat more than fifty megabucks. I don't know how much. Every time I ask how much it cost, people here change the subject.

What's a bubble chamber? These are large detectors filled with liquid near its boiling point. Just before the particle beam is due to arrive, a piston slides out of the chamber, abruptly lowering the pressure. Now the liquid is "superheated" above its boiling point, but still not boiling yet.

This situation is unstable. The slightest disturbance—such as tapping the side of the bubble chamber—will trigger boiling. Bubbles will form and grow rapidly. But for a moment all is quiet.

Then the beam comes through. An electrically charged particle will zip past the atoms of the liquid, ripping electrons away as it goes. This tiny amount of ionization is enough of a shock to start bubble formation. Along the track of the particle, a trail of bubbles grows until they are big enough to see.

The chamber is equipped with windows and flashlamps so several cameras can snap pictures of the trails from several different angles. Makes a nice picture of a particle interaction. If the chamber has a magnet around it, the particle tracks curve: gently for high-energy particles, tight crazy spirals for low-energy particles. This was

important detector technology in high-energy physics for twenty-five years or more.

Magnus went on to ask, "Does someone else know of any experiment that still uses a bubble chamber?"

Not quite. But as recently as the spring 1990 fixed-target run, Fermilab operated a freon bubble chamber of 1 meter built by a Japanese firm (Toshiba? I forget) for Tohoku University and other collaborators. Experiments 745 and 782 used it. See publications of T. Kitagaki and friends in various physics journals. It was dismantled when the run ended, but some of the pieces are still in Lab F. Here's a fine memory: On the last night before they shut it down, they pulled the camera heads off, and we could stand on a platform, shine a flashlight through the window, and watch particle tracks with our bare eyeballs in real time!

When I came to work here in 1978, we had a 30-inch hydrogen bubble chamber in a hadron beam, and the "15-foot Bubble Chamber" (in truth, a 12-foot sphere with a 3-foot beak on the upstream side) at the end of our neutrino beam. CERN was operating both BEBC, the Big European Bubble Chamber, and a rapid-cycling device called LEBC (take a guess at what *that* stands for). For several years I heard physicists who were not BC users complain that bubble chambers were dead, and obsolete technology, but we kept on operating them. They're all gone now.

Although everybody thinks hydrogen is dangerous, operating a facility with lots of hydrogen is a well-understood problem. You just gotta be careful. Heck, the Zeppelin company operated hydrogen-filled passenger airships for a long time, maybe twenty years, with a good safety record before the *Hindenburg* burned.

Maybe the neatest thing about our big bubble chamber was that it was surrounded by a big superconducting Helmholtz coil of 30 kilogauss—oops, I mean three Tesla—with no iron return yoke. The field lines just stretched out of the building and into the gravel lot around it. I measured a 4-kG field at the outside wall and 1 kG a few meters away. We always left our watches and keys in the control room, but I managed to wipe a few credit cards before I realized they had magnetic stripes (card readers were just becoming common at that time). You could feel the tug on the nails in your shoes as you walked around, pieces of chain attached to the BC apparatus formed graceful arcs with their ends in the air, and out in the yard bits of stray metal, screws, and such stood balanced on end.

BC users employed plenty of tricks to extend the useful life of their detectors. The 15-Foot was surrounded by wire chambers and scintillators to detect incoming and outgoing charged particles and get approximate track parameters, so (1) the electronics could decide whether to fire the flash and record a picture of the event and (2) the physicists could figure out where to look for tracks on the photos, which helps in the presence of non-interesting tracks such as muons contaminating the neutrino beam.

I recall one experiment which had a box of photographic

emulsion submerged inside the liquid hydrogen of the bubble chamber. Emulsion has much better resolution for particle tracks than bubbles or anything else, but it's a pain to work with. The idea was to find tracks on the BC photos that intersected the emulsion. After a run of a few months, the emulsion would be removed, sliced up, and developed. If physicists suspected an interesting event had occurred inside the emulsion box, they'd use microscopes to examine the slices corresponding to the track locations to see, for example, charmed-meson production in great detail.

In its final years (hmm, 1984? 1985?) the bubble chamber folks installed a big laser to take holograms through one of the camera ports. These had the nice property that bubble tracks were in focus throughout the volume of the chamber at pretty good resolution (forgive me if I don't offer a more lengthy explanation). I recall they had problems keeping the laser power density low enough so that it wouldn't boil the hydrogen in the laser beam's path... The later Tohoku chamber was also equipped with holography.

The 1987 Tevatron run was the 15-Foot's last, and it was shut down in 1988 if memory serves. If you come to a Fermilab social event at the Barn in the Village (I recommend barn dances—contradancing and square dancing on the second Sunday of the month at 7 PM) you can see a bubble chamber photo behind the stage that's a picture of an event blown up to actual size of the chamber. Very nice for explaining particles and tracks and events and the stuff we do.

DAVE'S BIRTHDAY JINGLE

Mary Lynn S. Johnson

Bill Higgins was famed at one time for taking in stray waifs (friends) and either putting them up for awhile until they became employed, or giving them a place to stay while on a long road trip. His apartment in West Chicago was even nicknamed "The Nuclear Arms Hotel". Since Todd and I had both partaken of Bill's generous hospitality, we decided to carry on the tradition and gave Dave Ifversen a home base to work from until he became established in his new job at Fermilab.

During his sojourn at our apartment, we made various attempts to make the holidays "special" for him, but no plot was quite as elaborate as the one we put together on his birthday in January of 1985.

Dave had always had a fondness for belly dancers and especially for Barbara Eden in *I Dream of Jeannie*. Now, as it turned out, Kathe (Bibi) Sandstrom was an amateur belly dancer and was going to be coming through Chicago by train right on Dave's birthday. Although she was only going to be stopping in Chicago for a couple of hours, she wanted to see us, so I asked her if she'd do us a favor...

Dave came home from an owl shift that morning and he was beat. He fell in bed right away and was asleep almost immediately. Meanwhile, we'd collected Kathe at the train station and driven her back to the apartment. She changed into her jingling coin-laden outfit while I cued up a tape of Ravi Shankar music on a portable tape player. Then, while Todd followed armed with a camera, we tiptoed into Dave's room where he was sound asleep.

Pushing "play" filled the room with the sounds of pulsing drums and finger cymbals and Kathe went into action; sweeping scarves and undulating at the side of his bed. Poor



Kathe (Bibi) Sandstrom after belly-dancing for Dave Ifversen's birthday.

Dave groggily woke up and then stared wided-eyed and blinked several times as he tried to focus on the goings on around his bed. I started cracking up so bad that I could hardly stand up and Todd snapped a couple of priceless photos of Dave's stunned expression. After a few minutes of this, we cut the music and allowed him to fumble around and find his glasses.

Even though Kathe was a bit embarrassed at dancing for someone she didn't know, they both thought the whole thing was pretty funny and had a good laugh over it. Dave's only complaint was that he couldn't keep his "present".

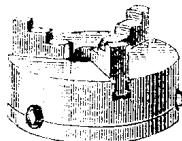
YOUR MISSION, SHOULD YOU CHOOSE TO ACCEPT IT...

Todd Johnson

One practical joke at the Lab had "Mission Impossible" overtones; At one of the gates leading to the Main Ring tunnel, a video camera allows those in the Main Control Room to see who is entering and to verify that they have the required safety gear. Late one night, a coworker of mine dialed up the entry gate image on a small monitor and took a picture of the empty access hall with an oscilloscope camera. A minute later he had a nice polaroid which looked identical to the video image. He disappeared with the photo, a ruler, and a roll of duct tape, and we soon saw lots of blurry activity in the vicinity of the camera. The image soon refocussed and he called to make sure it looked OK. He had taped the ruler to the camera bracket and the photo to the end of the ruler so it hung in front of the lens, giving a plausible picture of the empty hallway and gate.

The next day was scheduled for maintenance, and someone called the Control Room Duty Assistant, who is in charge of keys and accesses, and requested her to buzz the gate open. She looked at the monitor and saw absolutely no one there and told the guy "Well, call me when you're at the gate." The confused man replied "But I AM at the gate! There are three of us RIGHT HERE!" "What gate are you at?" She asked. "A-zero gate, right here. Hello!" They replied, impatiently waving in the direction of the camera. "I still don't see you at A-zero. Are you sure?" She queried again. This sort of exchange continued for several moments until someone noticed the modifications made to the camera.

We later speculated that it might have been more effective to photograph the gate standing wide open and install the photo on a day when the accelerator was running...



GOOD TO THE LAST DROP

Todd Johnson

One day at the Lab, a coworker was busily cleaning dust out of some piece of test equipment with a shop vac when a buddy of his, having nothing better to do at the moment, sauntered up with a big mug of steaming coffee and stood watching with that "whatcha doing?" sort of look. The fellow doing the cleaning was in no mood for idle chatter, and without a word quickly reached over with the hose. His friend's coffee disappeared with a brief loud slurp and he returned his attention to the equipment, leaving his stunned buddy clutching the empty mug.

STRANGE BREW

Todd Johnson

An entry in my "That-was-interesting-but-I'll-never-do-it-again" list was the time we tried making root beer in college. Paul Westerfield, Tom Snoblen and I found a store that sold root beer extract. The recipe didn't sound TOO hard, so we tried it. We bought a case of quart pop bottles from a local Vernor's plant, and the required ingredients. We were freshmen, still in the dorm, so we had to use the dorm kitchen. The recipe called for something like 5 gallons of water and an enormous amount of sugar. We couldn't get that large a volume of water up to the required boil, but it was warm. We added the yeast and got a fair percentage of the liquid into the bottles rather than on the floor. No capper was available so we improvised with a bunch of those rubber bottle resealers with the metal plunger on top. The bottles were then stored in Paul and Tom's room (thank heavens) under a false floor they had constructed as part of their loft.

A week or so later, with about three weeks to go on the fermentation, theoretically, Tom was studying in his room when he heard a strange "THOOOMP! glugluglug" sound. About the time he realized what he was hearing, most of the other stoppers let loose and a sticky brown amoeba emerged from under the beds. Fortunately it wasn't my room and it was cleaned up by the time I heard of the catastrophe.

DUESTER POWER & LIGHT, INC.

Todd Johnson

Living in the dorm with Al Duester was an experience. He was the king of freebies through the mail, meaning he would write to various manufacturers saying he was a starving engineering student and did they have any "cosmetically defective or otherwise unsaleable" (patented magic phrase) components they could donate?

One particular freebie letter was sent to Gates Energy Products asking for 12 2-volt "X" cells (a little bigger than a "D"). It turns out that the Gates brothers are MTU alumni, so they apparently felt generous. Al went to get the mail a few weeks later and found a package slip in the box. He took it to the desk, the woman looked at it, then glowered at him and pointed to the pallet in the corner laden with boxes bearing the Gates logo.

The boxes were ferried up to the room and opened. They hadn't sent 12 2-volt cells, they sent 12 12-volt packs of rechargeable sealed lead-acid batteries.

The next power outage to strike the dorm (not infrequent by any means), the hall was filled with the usual yelling rabble, but after a few minutes, one room was bright and cheery, thanks to a salvaged headlamp with one good filament remaining, and the batteries. Music soon followed, to the extreme consternation of the other residents.

A few days later I was headed for the room and saw brilliant shafts of blue light streaming from under the door periodically, but it was absolutely silent. Unlocking it and peering inside I found Steve, another roomie, at his desk with a stack of the Gates batteries clipped in series. One lead ran to a couple pennies on the desk, the other clip held a

mechanical pencil lead. Steve took aim, then shielded his eyes and lowered the lead and struck an arc. Very bright. Almost completely noiseless. Never did quite weld the pennies, though.

BRITTANIA RULES THE (AIR) WAVES

Dermot Dobson

I heard of the following story in a magazine here; it's unsubstantiated but has a ring of truth about it, bearing in mind the proposed legislation to restrict the sale of scanners.

There has been an upsurge in car theft by juveniles over the last couple of years for "joyriding" and showy demonstrations of high speed driving in built-up areas late at night. This has got so organised that the kids arrange these demonstrations in advance and charge money to watch! Of course the police and everyone else takes a dim view of this and attempt to stop and arrest the culprits. The police still use unencrypted radios here and so the kids listen in on VHF/UHF scanners to avoid getting caught.

It has always been illegal here to listen to anything not intended for public broadcast, including public services and cellular 'phones. You may have seen the furore about the so-called "Dianagate" tapes recorded by a retired bank manager with a scanner and sold to a tacky newspaper.

(Ghod!! when are we going to stop adding the suffix "gate" to every indiscretion of a public figure? What's next—Wickergate: The Michigan Missile Conspiracy? Dobsongate: The Woods Hole gin smuggling scandal?!)

This led to the interesting legal position where it was alright to listen to Radio Moscow (licensed for public broadcast in the USSR) when it denounced the capitalist UK government and called for its overthrow—but illegal to listen to a pirate station in the UK broadcasting calls to support the government. (Yep, they really were prosecuted and fined... a dotty member of the aristocracy, Lady Someone of Chelsea, was behind a pirate station called "Radio Enoch—The Voice of People against Marxism." (n.b. Enoch Powell was a prominent right wing politician a few years back.)

A little while ago (too early to be a journalist's April 1st practical joke), a police force in the south of England decided to flush out some illegal scanner users with a rather novel scheme. They sent out a fake general call for reinforcements to go to a remote bit of countryside on the way to nowhere, saying that an alien space ship had landed and that a security cordon was required. They then sat down to wait and arrested all the members of the public who turned up to watch, confiscated their scanners and charged them with offences under the 1957 Wireless Telegraphy Act!! (Yes, radio is still referred to in that way officially here.)

I just can't wait to hear the court transcripts! It's the kind of thing we might do as a practical joke, but for the police it's unheard of! They must have started hiring SF fans.

PEER PRESSURE

Bill Higgins

As I climbed over the railing of the second-story walkway, I tried to pretend that everything was perfectly normal. My roommate Bruce down on the snow-covered sidewalk brandished my trusty Instamatic.

I remembered that pre-adolescent lecture we all got from our mothers. "And I suppose if your friends jumped off a cliff you'd jump off it too? Is that right?" I was glad Mom wasn't here to see me perched on this narrow ledge. She's never satisfied with my explanations. "But, Mother, we had two feet of snow last night! They're calling it the Blizzard of '78! And the snowdrifts around the bushes



Bill Higgins makes a leap of faith.

down there are really, really deep! It won't hurt at all!" She would think it dangerous to jump off the second floor.

Bruce said "Ready!" No, Mom would never approve. I began the count.

"One!"

I looked up and behind me at the THIRD-floor ledge where Barry Gehm stood poised to leap.

"Two!"

I wonder what HIS mother would think...

"Three!"

THE TWILIGHT LOFT-- A TRUE STORY

Robert C. King

NOTE: First paragraph spoken by Rod Serling.

"Ronald Cenfetelli, an ordinary Purdue University Freshman, feels somewhat apprehensive about this place, this 'Cary Quad', but he is optimistic and determined to make the best of a new situation. Soon, he will meet his new roommate, a fellow by the name of 'Robert King'. A person who will alter the course of his life forever. You see, Robert is bringing a surprise. Perhaps Ron would not be so optimistic if he knew he was about to encounter ----

THE TWILIGHT LOFT!"

Being an ROTC student, Ron had arrived on campus a full week before classes began. He settled his few belongings into the tiny 'Quad' room he would be sharing with his yet to arrive roommate. Actually, Ron would be seeing very little of this room in future months since his ROTC activities and aeronautical engineering classes would allow him free time to eat, sleep, and little else.

A few days later, Robert arrived around noon. Ron was not in, and did not return until 4pm. Upon his return, Ron discovered Robert had been there a full four hours and hadn't wasted a moment. All of Ron's possessions, his bed, and assorted furniture were piled in the hall. Loud crashing noises were coming from the room.

"My God! What's going on here?" Ron shouted as he scaled a dresser and peered into the room.

"Oh...Hi...are you Ron?", said Robert from within a strange structure constructed of heavy lumber, pulleys, cables, counterweights, and assorted junk that looked like it came from a Frankenstein movie.

"Uh...Yea, you must be Robert.", he said unsteadily.

"Right. Sorry about the mess, but I'll have the lofts installed soon, maybe even by tonight!" Robert said optimistically as he reached for a power drill.

"Lofts?" was all Ron managed to say as he stood there in shock. Robert continued drilling, sawing, and otherwise mutilating innocent 12 foot 4x4 boards. Robert proudly showed him how he already had one side "almost working." As Robert described his efforts, the intended function of this structure became frighteningly clear.

The standard bunk bed supplied by Cary Quad could be disassembled such that the bed frame itself could be separated from the support frame. Robert had designed a loft which would suspend two bed frames freely in space. Each bed was suspended by four steel cables. These cables in turn were to be connected to a 95 pound counterweight which was made from short lengths of old railroad track. To synchronize and direct the cables, they were threaded over many pulleys, some of which were connected by axles. All in all, the design was somewhat medieval.

When the bed was lowered to its lower (sleeping) position, it hit a stop at about 4 feet off the floor. This left adequate space to prevent damage to any items of furniture below and yet allowed one to get in and out of bed by stepping on a chair.

When the bed was raised to its upper (storage) position, it stopped at about 6'4" above the floor. This provided adequate headroom even for giants such as Robert.

At least that was how it was to work in theory. Ron felt a cold chill of distrust as he looked at the bizarre framework. He noticed that while Robert's bed was "almost working", his bed was "not even close to working."

Soon Ron had to return to yet another ROTC activity, but the image of his once peaceful refuge was shattered forever.

Three hours later, Ron apprehensively returned to his room. With some measure of relief, he noted that most of the room's contents were no longer in the hallway. Once in the room he saw both beds in the sleeping position and Robert was installing a storage shelf above the door -- more construction.

"Hi, Ron! -- Oh, by the way, don't ever knock this 2x4 out from under this shelf. If you do, hundreds of pounds of books, parts, TV's and stuff will fall on our heads."

"Oh."

"I don't have the loft finished yet, but I do have both sides pretty much completed to the point where we can each sleep on our beds in the 'lowered' position. After all, we have to have beds to sleep on tonight."

"Right", Ron said, but his voice did not reflect the mindless optimism of Robert's. After some encouragement, Ron decided to test out his new bed.

It was kind of eerie lying on a bed with no supporting structure underneath. From below it looked sort of like it was floating. Since the bed was suspended on 4 cables, it took up no floor space. His desk and many of his prized possessions were directly underneath the bed. Robert assured him that the cable had a test strength of over a ton. Ron was not confident but he finally decided to give it a try.

That night, Ron discovered a major disadvantage to the suspended bed -- it swayed. In response to every movement of his body, the bed swayed about and bumped into the wall.

Robert awoke to find Ron sleeping blissfully on the floor of the room, snoring like a minor earthquake. Fearing a collapse, he inspected Ron's bed. There was absolutely nothing wrong with it. Ron awoke and was rapidly on his way before Robert could get anything from him beyond some mumbling about "couldn't sleep" and "seasick". It seemed Ron was a man of very few words.

Undaunted, Robert resumed construction on the counterweight system. He attached the two rusty 95 lb. chunks of iron to counterbalance the weight of the beds. He then installed guides which prevented the beds from swaying, and carefully aligned the system. But then Robert discovered a problem. If the beds were raised or lowered by abrupt pressure on only one side of the bed, the bed would jam similar to the way a window might jam if lifted by only one side. If the bed did jam, it had to be unjammed with a pull in the opposite direction. Not a serious problem at all -- at least not in Robert's opinion.

That afternoon, Ron returned to watch this nightmare unfold before his very eyes. As a bed sailed up to the ceiling, its counterweight plummeted stopping just short of the floor. As a bed descended and latched into sleeping position its counterweight sailed up towards the ceiling. He was told that this was how it was supposed to work. Leonardo da Vinci probably would have loved it, but Ron Centefelli secretly wished for a simple earthbound bed.

Robert carefully instructed Ron in the fine points of bed raising and lowering. Ron just stood there with glazed eyes, silently thinking: "This isn't happening, it can't be."

Next morning Robert discovered Ron snoring on the floor again. This time the excuse was "couldn't get it down". Robert brought the loft down with one hand. No problem. When Ron tried, it jammed. When Ron tried to put it back up, it jammed. Sometimes when Ron simply looked at it -- it jammed.

Eventually, Robert was able to adjust the system so that Ron could lower the loft three out of four times. "Ron -- are you sure you want to be an engineer?" Robert asked. Ron just shrugged. He wasn't worried; he knew aeronautical engineering didn't require him to operate mechanical monstrosities such as this.

On the next night, everything seemed to be going smoothly. Robert made sure Ron was able to get his bed down so there would be no more excuses. The beds didn't even sway. Ron actually fell asleep without difficulty.

Next morning the beds stowed conveniently out of the way, maximizing the space in the tiny room. It appeared to Ron that he might have misjudged this contraption.

The next morning at precisely 2:37am a loud BAM echoed through the room as Robert awoke to discover that his bed had abruptly rolled 55 degrees to the right and that his mattress was slowly sliding down this incline. Acting from blind instinct (that's all one has when awakened at 2:37am), he began climbing the sliding mattress in a seeming race against death. Upon reaching the edge of the mattress and grasping the solid springs, Robert had a moment to clear his head and realize that his dangling feet were actually only one foot off the ground.

Stepping down, Robert surveyed the problem. One of the front pulleys had given away at the base. In an attempt to economize, Robert had purchased these pulleys at K-Mart for 99 cents apiece. It now seemed that they were not quite adequate. Nothing could be done now; new pulleys would have to be purchased in the morning. Ironically, Ron, who was an extremely sound sleeper, missed the whole show.

Ron awakened to discover Robert asleep on the floor. Ron actually found the situation and its associated explanation somewhat amusing until he realized that he same types of pulleys were in use on his own bed.

Robert replaced the defective pulleys with stronger ones, but Ron was not satisfied. After demonstrating that each loft would support four people with ease, Ron finally agreed to

try the loft again. There were no problems. He eventually came to use the bed much more frequently than the floor. But he never really trusted the loft again. He knew it was simply waiting to catch him unprepared.

NOTE: Last paragraph spoken by Rod Serling.

"Consider the case of Ron Cenfetelli. A student trapped in a room with science gone mad. And despite this, he endured and continued his college education. Ron was adapting to the inevitable. But he couldn't help thinking to himself "Why the Rube Goldberg beds? -- I thought Robert was an ELECTRICAL engineer." But the was no answer. Ron was living with ---- THE TWILIGHT LOFT."

BILL HIGGINS'S FYUNCH-CLICK

Mary Lynn S. Johnson

In the early Eighties when I first got to know Bill Higgins, he was very much into doing models of Larry Niven's Ringworld and creatures from the Niven realm of stories. I liked Bill right away and I thought I could do something special for him for his birthday.

At the time, I was making and selling a lot of unusual stuffed toys and that was when I hit upon the idea of doing a stuffed toy version of a Motie Fyunch-Click. (Moties are three-armed techie aliens from Pournelle and Niven's book *The Mote in God's Eye*. "Fyunch-Click" is a term the Moties used to describe a very close companion.) I proceeded to make it out of velour (one of Bill's favorite type of shirts) and it came out pretty good. I decided however, that it needed something more to make it a little more comical, so I made it a bright turquoise blue t-shirt...three armholes and all.

I took the little shirt with me to the mall in Greendale, Wisconsin, where I lived. I knew there was a t-shirt shop there that would be able to imprint letters on it with an



"Eddie" the Motie and his t-shirt.

iron, and I wanted the shirt to say "Bill Higgins's Fyunch-Click" on the front. The clerk at the shop gave me only a slightly odd look when I wrote down for her what I wanted put on the shirt. But she really gave me a weird expression when I handed her the baby-sized t-shirt with three armholes. I simply smiled and let her draw her own conclusions about who was going to wear that shirt. She positioned the letters on it and then pressed it slightly in the iron and then showed it to me for approval of the placement. I told her that I liked it and she put it back in the iron and pushed the button to lock it in the down position. After about two or three minutes, she went and tried to open the iron, but the control button, when pushed, broke free and fell inside the iron's housing.

"I can't open it up!" she said, dismayed. I sure didn't want to have that little shirt ruined by overcooking in the press so I told the clerk to unplug the iron. She did and then all we had to figure out was how to get the shirt out.

Now, I've never had a fear of taking anything apart, so I asked her if I could look at it. She agreed and that's when I noticed that the switch was not far down inside and that the top of the iron would come off with only a few screws. I asked her for a screwdriver and then proceeded to open the thing up. I was determined to get my shirt back, but once I had it open, I discovered that the switch had only slipped free of a plastic clip that held it in place in the front panel. I put it firmly back in place and put the top back on. After plugging it back in, I pushed the button and the iron obediently opened for me.

The clerk was very grateful that she did not have to have someone come in and repair the iron, not to mention all the business she'd have lost until that could be done, so she refused my money and gave me a receipt (that I still have) that reads "Order is free. Customer fixed our iron."

I felt that the whole episode was very appropriate since the shirt belonged to a Motie; a creature known for fixing things.

DESKTOP GODDARDS

Todd Johnson

Years ago at Fermilab, several people maintained a rather high spirited atmosphere through the production of somewhat unapproved projects. One day in particular I was at my desk and I heard a "thumpf-blam!" noise coming from my boss' office, followed by laughter. This was repeated twice, so I went to investigate. As I rounded the corner I saw John, our second-in-command standing in the office doorway. He looked to the left and the right, and not caring that I was there, leaned back into the room and said "OK!". Again the strange sound occurred. I looked into the office to find one of our more creative group members fiddling with what had once been a large plastic fast-food drink cup, now bottomless and duct-taped down to the desk and overhanging the edge slightly. He inserted a second cup, this one having a crude paper nosecone taped on the top. Then he stuck a piezoelectric-fired propane torch up where the cup hung over the desk and gently pulled the trigger. The propane hissed into the cup for a second or two and then he pulled the trigger all the way, firing the spark. The explosion launched the second cup straight up, passing neatly through a hole in the suspended ceiling made by the first launch. The missile continued a few feet more

until it hit the air duct up in the ceiling, making the "blam!" noise I had heard. There was brief talk of scaling it up, but that was quickly abandoned.

And now I've told this story where Guy will hear it! NOOOOOOO!!!!

JUNIOR ECM

Todd Johnson

One of the first kits I ever built was an FM wireless microphone I got with Green Stamps. I didn't know much about soldering so I used my woodburning tool. The microphone never entirely worked, though the oscillator functioned just fine. I discovered I could neatly wipe out TV reception from many tens of feet away with this thing. The circuit board found a home in a 7-UP can from which I had cut the bottom with a can opener. The first incarnation had an old pull chain lamp switch in series with the battery with the chain attached to the pull-tab ring. Pulling the tab turned on the transmitter, after which it could be innocently left on the coffee table to the consternation of my parents. A later incarnation used a mercury switch that would turn on when one "took a drink" from the can. I particularly enjoyed using it when an older cousin was trying to watch her soaps.

The device evolved during high school with the purchase of a different FM module. This one was housed in a "blaster" made from PVC pipe scrap. My friends and I used to take it into department stores and watch the salesmen try to explain the failure of a few dozen TV sets to their prospective customers. "Oh, these darn fluorescent lights!" they'd say, or something to that effect. A careful hand on the tuner could just kill the color without degrading the luminance much, which they found real hard to explain.

In college, the jammer was put to good use every Saturday night when we would gather in the lounge to watch "Star Trek". It was not uncommon to find the lounge already occupied, usually by jocks watching some game. We would settle into some seats and in a short while the reception would begin to degrade. Eventually someone would get up and fiddle fruitlessly with the set, finally giving up and changing channels. Each channel would soon exhibit similar maladies until they got to "Star Trek", which was of course perfectly clear.

The final version used a 7404 TTL hex inverter as the oscillator. At 25 cents, the things became disposable. We'd freeze a 9 volt battery overnight, clip it on the "jammie", and leave it somewhere like a potted plant. The battery would thaw in about an hour and the jammie would come to life.

MY FIRST CAR TRIP FROM HELL

Linda Tangalan

It seems that this year's MiniCon was the year of the car trouble. Since I flew in, this was not the case for me. (For those of you who drove in without incident, Kevin Nickerson has probably got you covered.) Then, as Tullio was telling a few of us about his car-trip-from-hell, I recalled my first car-trip-from-hell.

It was spring break, my senior year of high school. Everyone who was anyone was going to Florida. Since I wasn't anyone, I went to scope out the college of my choice. (Boy, I never realized just how geekie that sounded until now!) Well, anyway, I went up with Chris Pellar (now Pellar-Kosbar). Since neither of us had a car, we had to rent one. Rental cars were not cheap, so what we really had was a rent-a-piece-of-junk. The trip up

was rather uneventful, just very llooooonnngg (as you all know.) The visit was a lot of fun as well. But the trip home... ooooooooooo.

I believe it was Chris's idea that we leave at midnight, saying that her Dad always preferred to drive at night, as there was little-to-no traffic. Not having any previous long-distance driving experience, I had no reason to argue.

So it was nearly 1 AM when the lights dimmed and we coasted to a stop at the 76 gas station about 7 or 8 miles south of Houghton. Although the sign said, "Mechanic on duty 24 hours" there was no one to be found. So we called Chris's then boyfriend, Dan Ehle (now Butler-Ehle) to help us. He, trying to find out where we were, asked if we were past Chassell. We, a couple of city girls from Detroit, said no, we weren't. (Anyone who knows the gas station to which I'm referring, knows that it *is* just past Chassell.) Well, Dan somehow managed to find someone with a car who was willing to come get us at this time of night/morning, and we managed to limp the car back to the dorms. We slept in Dan's room while we waited for someplace that could fix the car to open. Well, Dick's Mobil told us it was a bad alternator belt, and it'd only be about ten bucks to fix. Well, that wasn't bad, it just meant we couldn't eat anything on the ride home. So, round about 9:30 am we were off again. This time we got as far as the Mobil station in Baraga. Again, the lights dimmed, and the car rolled to a stop. We called the mechanic on duty, who told us we needed a new alternator. \$80. Since neither of us had access to this kind of money, we had to get ahold of Chris' dad to wire it to us. The kind folks at the bank told us that this could take anywhere from 2 hours to 2 days, and if that was the case, we could stay with them (since there were no hotels in Baraga back then). Boy, were we *shocked*.

Well, since we were two kids in trouble in a strange place that had a name I didn't even know how to pronounce, my mom suggested that we call the police. So we did.

They came and took us out to lunch, and drove us around until the money came, and the car was ready, a total of about 3 hours. Strangely enough, the rest of the trip home was uneventful. (The rental car company did reimburse us for the alternator when we returned.) Now, I realize this trip is nowhere near as hellacious as Tullio's, and for that I am truly grateful!

REALLY MAROONED

Bill Higgins

Remember the film *Marooned*, about an Apollo capsule whose engine fails, leaving the crew stranded in orbit?

Once, I found myself in a consuite where the TV was playing this old movie. Nobody was paying any attention to it. I fiddled with the color controls on the TV set to suppress current from the green electron gun. I couldn't get anybody in the room to comprehend the joke, however, much less laugh at it.

GETTING INTO TROUBLE IN A SMALL, SMALL WORLD

Bob Wittig

It started simply enough: "Make sure you look in the opposite direction from where they are trying to get you to look." These words of wisdom from my experienced Disney companions started me looking backwards in the Pirates of the Caribbean ride, seeing the carefully positioned spot lights, strobe lights and exit signs throughout the ride. It takes a techie to build up a sens'a'wonder by mentally dismantling the Disney "magic" that wows the typical rider. This mind set, along with Kevin's purchase of "Touring Disney with Kids", an unofficial guide to Disney World", set the stage for our post-Magicon assault on the Orlando Disney enclaves.

Pirates of the Caribbean

The pirates' boat ride was the first stop for our unofficial back stage tour. Immediately at the start of the ride I noticed a small observation window with a view of the boats and passengers entering the ride. The attendant watching must have been bored, since there was nothing to see, nor had we as riders, had a chance to cause any trouble. It was, however, a likely spot for the master ride control, since the control panel at the loading point had only two buttons, boat start and boat stop.

This was a good ride for introducing the use of cleverly positioned spotlights and air jets. The only real puzzle about this ride was the technique for producing the jets of flame shooting out of the water. Since there seemed to be no oils in the water, we had to guess that they used a flammable gas such as propane or natural gas to cause the flames, but how was it reliably ignited on or under the water?

This ride also introduced Disney's extensive use of the electric eye. These were most noticeable at the end of the ride, where they kept the boat from crashing into the one in front as the passengers were unloaded. They must have been used throughout the ride since the jets of flame from the cannon shots were so conveniently timed. (Since when do cannon balls landing in water cause an eruption of flame?) [Maybe they were made out of sodium? -Ed.] A strip of similarly reflective material placed along the waterline of the boat might produce interesting results on this ride, (or should I say lack of interesting results). The lack of a reflector saved the ride for the rest of the riders, and me from the possibility of an abbreviated visit.

It's a Small World

The next stop was the "Small World" ride. The main interest in this ride was that Bob Ewart couldn't stand the song, and made the mistake of telling the rest of us. (But what are friends for?) It did afford us the chance to try to spot the exits hidden throughout the ride. There must be some county building code governing the minimum distance between exits, ordinances which Disney has taken on as an exercise in misdirection. It would be interesting to know how many exits are actually required.

This ride wins the prize in my mind for the most cleverly disguised exit. One of the rooms has an exit clearly marked while remaining in scale with the small characters nearby. This was achieved by moving the exit door down a short flight of stairs out of view of the riders. A bit of decorative framing around the sign matched the standard exit sign with the decor in the rest of the room. The rest of the exits in this ride used the stock trick of hiding the exit behind a panel so that it could be seen only when looking backwards. This ride also gave us a chance to see the various ways that speakers are hidden on a ride. I spotted them hidden in the center of flowers, behind walls, signs, and even in a window.

Haunted Mansion

The highlight of the visit to Disney was the Haunted mansion. First off, this ride gave us an idea of the volume of people pushed through a popular Disney ride. There was about 1/4" of brass worn off the gargoyles on the corner posts compared to posts out of the line of travel. Even with 20 years of wear, that is impressive. (Budget restrictions prevented me from gathering any significant data on "The Erosion Rate of Brass when Exposed to Human Appendages", but a grant proposal is available upon request.)

Rather than trying to review or explain one of the most famous rides at Disney, I would like to address Disney's paranoia as revealed in this ride. At the end of the Haunted Mansion ride the track passes what appeared to be a control panel with a map of the ride. A second trip through with a zoom lens, some fast film, and a blatant disregard for the no flash photography rule, allowed me to take a picture of this panel. This picture provides an insightful view of ride monitoring at Disney. (See figure 1.)

The panel title says it all: "INTRUSION SYSTEM STATUS PANEL". This is no ordinary control panel, but rather a look into how Disney keeps track of potential trouble makers! The map shows 12 areas with "MAT INTRUSION" or "DOOR INTRUSION" sensors. So the next time you decide to inspect one of the effects in the Mansion more closely, remember not to touch the floor. As best I can tell, the entrance to the mansion is near the square marked "SYSTEM IN BYPASS". The map also shows titles for the effects, as well as the path of the "doom buggies" from load to unload belt. While I don't think all of the effects are shown on the map, this is a good representation of the effects in the mansion. The only effect that I can't place is the very last one titled, "LITTLE LEOTA" at the end of the ride. I can't remember any effect between the view of the hitchhiking ghosts in the car with us and the unload belt.

The exits in the mansion were for the most part hidden by turning the cars away from the exit. The cowling of the car was quite effective in blocking any view of the exit behind. The map indicates three exit doors hidden throughout the ride. Adding in the entrance and exit doors used by the riders gives a total of 5 known doors in the mansion. I seem to remember one other door, but by the time I got the picture developed, I couldn't remember where it was located. If anyone goes through the mansion in the near future, please let me know if you spot any doors not on the map.

Indicator lights accompany each of the labeled effects on the map, a yellow and red light for each mat or door sensor. My best guess is that they used to track possible false alarms. Possibly the yellow light comes on immediately, and the red only after the sensor has been triggered for a certain length of time. Alternatively, the yellow light may come on and stay on indicating a reading from a sensor, and the red light only indicates a current reading. Reader speculation is welcome. All of the mats come in pairs, one on each side of the track.

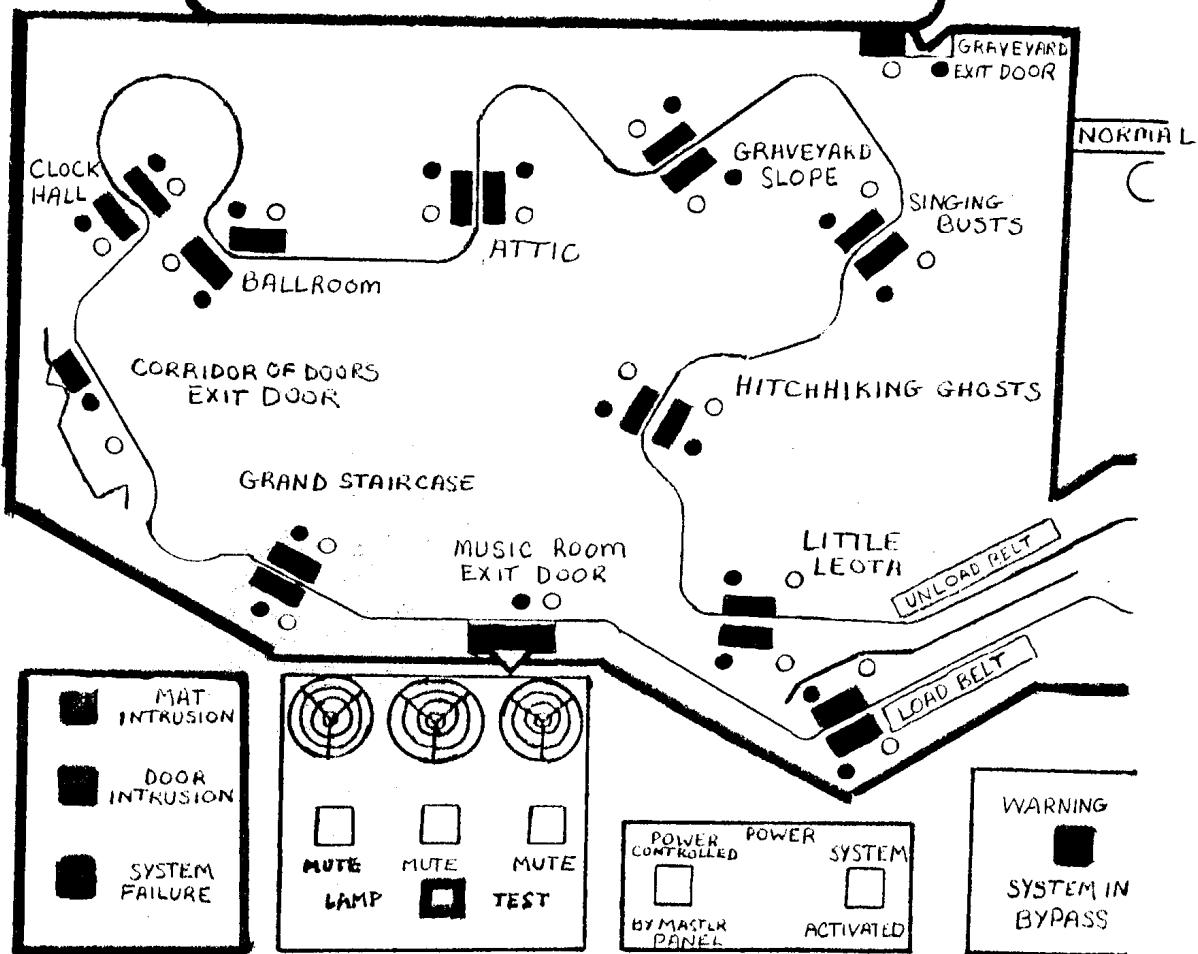
The remainder of the panel consists of mundane indicators for power, lamp test and alarm mute buttons and the ever popular "SYSTEM FAILURE" indicator. The lower right corner has a warning indicator for "SYSTEM IN BYPASS" probably used during maintenance periods. The extreme right side of the panel was cut off in my picture but there seems to be a button there marked "NORMAL" that probably says "NORMAL OPERATIONS".

I recommend including a copy of this map in your required supplies for any future trips to Disney world.

EPCOT Center

The conclusion that I came to was: High tech control panels are boring. We found no maps or other interesting

INTRUSION SYSTEM STATUS PANEL



panels in all of Epcot. In fact, all of the panels looked very similar. Touch screen CRTs without any nifty information displayed on them. A good way to get close to the control panel on Spaceship Earth is to have one member of your party wait back in line for 5 minutes. The ride attendant will let you step off to the side and wait. You will be waiting right next to the control panel. You will also be at the center of the loading belt for the ride. Watching the circling cars probably makes the attendants feel dizzy and disoriented.

When pursuing control panel pictures at Epcot I recommend the following ruse: Ask the attendant if you can actually take a picture. They are usually so confused by the request that they will say yes! This works much better than wandering over to a panel and trying to set up a picture while the attendant is busy elsewhere. The attendants start to get testy the third time they ask you to move away from the panel. (See the section: "Getting thrown out of Disney World".) In spite of being an entertainment complex, Disney in general has no sense of humor whatsoever!

The only other interesting tidbit discovered at Epcot was on the "Body Wars" flight simulator ride in the "Wonders of Life" pavilion. The seatbelts on the ride are locked and would not open during the ride. So, until you are told to unfasten your seatbelt, the release button is useless. Neat! This would be great for keeping kids in their seats on school buses, but I guess some federal agency would complain. I suspect that the seatbelt on "Star Tours", Trip to Endor ride works the same way, but I didn't care to go back to MGM and confirm this.

The Monorail

I have since been told that everyone knows that you can ride in the front driver's compartment of the monorail. Luckily this fact was found in the guide book before we got to Disney.

We had to wait for two trains to go by, but, finally, we were able to get a ride up front. Interestingly enough, the driver is the only one on the monorail who can open their own door. The controls for the rest of the doors are outside the driver's cab. Outside, I guess, to prevent an absent minded driver from accidentally opening the door while the train is moving. The door control panel is pretty dull, a 2 x 12 inch panel, with 9 buttons labeled "E", "A", "1-6" and "C" from top to bottom.

The control panel on the inside of the monorail was one of the most functional of the panels I saw. This panel contains a shift lever with four forward and four reverse speed settings, with neutral in the center. It also has a key switch above the forward/reverse and run/stop indicators. In the center of the panel is a large red plunger style button commonly used for emergency stop. While this button was not labeled as such, I bet this is the E-Stop for the train. To the left of the red button are three bar type indicators labeled brake pressure. Next to and below these indicators is the driver's microphone, horn button, PA system button, and five buttons to control the pre-recorded announcements that accompany every monorail ride.

A display panel angles up from the control panel. This panel contains two digital displays for speed as well as a graduated bar display. The bar display tops out at 50 which leads me to believe that maximum speed for the train is somewhere around 50 mph. Also on the display panel are door open, door closing warning and door closed indicators. There are eight warning indicators for system breakers, which the driver indicated are the most common problems, and are correctable from inside the cab. The rest of the display panel is taken up by a CRT display monitoring things like "PROPULSION CURRENT", "MODE", and "DAILY LOG". There appear to be 5 selection buttons at the bottom of the screen for controlling screen display mode.

The monorail driver has full control of the train, however, our driver assured us that there were computer controlled interlocks preventing a train from getting too close to the train in front. He quoted 15 pylons as the closest two trains could get. (I estimated the pylons to be 30 to 40 yards apart, but then I am lousy at estimating distances.) There is also a set of breaker switches behind the driver controlling door and other train systems.

I recommend riding up front in the monorail at least once. Pictures taken through the large front window may not turn out all that great, but, you'll certainly have more room than the rest of the people on the train.

Getting thrown out of Disney World

Actually, we managed not to get thrown out at all, this section was only included to keep you reading this far! We found that most ride attendants were willing to let us take our pictures, satisfied with their assumption that we were mostly harmless. A little quick thinking and footwork made up for the rest. All in all, mentally disassembling Disney World kept me interested, bemused and my companions slightly worried, throughout our visit.

HOW NOT TO BE SEEN

Mary Lynn S. Johnson

Back in 1979, I think, North AmeriCon was coming and I wanted to do some sort of costume to wear to it. However, I had been unable to come up with anything clever or inspiring. One evening, I was over at Mary Jean Holmes' house in Milwaukee and was telling her about my dilemma. She made a few suggestions and though they were neat ideas, none of them could be produced in what was increasingly short notice. The conversation eventually drifted away to the last time I'd seen Chris Cloutier and the GT crowd at X-Con. Chris had been sporting his latest costume effort that he had titled "Clint Priestwood"; a parody of Clint Eastwood as a priest complete with revolver and a hip holster, leather gloves and spurs. (I gave him a set of spurs for Christmas one year, which were painted with white crosses on the leather straps.) This outfit gained him a lot of notoriety and hilarity at every con he went to and he was frequently approached by people who wanted to 'join' his sect.

Then Mary Jean hit on an idea. She left the room without a word and went downstairs. While I looked at her husband J.R. in confusion, wondering if I'd said something wrong, he just nodded knowingly. Half an hour later, she re-emerged from downstairs with a costume in hand.

"Put it on." she said.

To my surprise and delight, she had conjured a very passable gray nun's habit out of her sewing machine while I'd been sitting there. With evil glee, we added a borrowed rosary, (later replaced with a rosary that was made using resistors for the beads), a pair of well worn tennis shoes, a bullwhip, a pair of mirrored sunglasses, and a replica .45 caliber pistol in a shoulder harness borrowed from Bill Hanes. Thus was born "Sister Mary Magnum" and my plot to surprise Chris at North AmeriCon. Thanks Mary Jean, wherever you are!

Once the con rolled around, I ended up driving to Louisville, KY with Chris and Al and Todd in my car. Little did Chris know what he was in for! Throughout the first two days of the con, those that knew of the plot kept their mouths shut. Then on Saturday night, I gathered the parts into a bag and with Todd's help as door guard, I changed into costume in one of the empty ballrooms downstairs. Once attired, we went to find Chris, who was already making the rounds as Clint Priestwood.

We found him along with a crowd of other GTers standing outside the main ballroom. I quietly walked up behind him and tapped him on the shoulder. He was stunned. I said to



Chris Cloutier and Mary Lynn Skirvin as Clint Priestwood and Sister Mary Magnum: The Vatican Death Commandoes.

him, "My name is Sister Mary Magnum and I'm here to help you with your Crusade!" Then he broke up laughing. He walked around me several times, absolutely amazed that I'd come up with such an outfit. Once he regained his composure, he immediately grabbed me by the arm and decided we needed to go crash the International Food Faire that was in full progress outside the hotel.

A lot of costumed fans were walking among the non-fannish public attending the faire. But none of them got the respect and deference we did! Everywhere we went, people bowed, smiled and got out of our way. Even the police we encountered held doors for us and tipped their hats, despite the fact that we were 'armed' to the teeth. By the time we got back to the hotel, Chris was in hysterics!

"I don't believe it!" He laughed. "We could go into the White House dressed like this and no one would stop us! Why I could bring a bazooka in there and no one would give me a second glance!"

Later, our friends entered us in the masquerade (thanks guys!) as 'Clint Priestwood and Sister Mary Magnum; the Vatican Death Commandoes', and we won first prize for "Most Heretical and Python-esque". Chris and I even genuflected when we accepted the trophy.

MY FIRST LEYDEN JAR- BY PLAYSCHOOL Todd Johnson

When I was very young, I managed to talk my parents into getting me a small Van DeGraff (bless 'em!) Back when these things were about 30 bucks. It gave countless hours of

fun, and helped me develop a good intuitive feel for electrostatic principles. I had heard about a device that would store charge called a "Leyden Jar" in 4th grade, and even saw a drawing of one, but didn't quite get the principle of operation. I built one anyway from an empty plastic shampoo bottle stuffed with steel wool with an old telescoping FM antenna for the inner electrode, and foil for the outer electrode. I revved up the Van DeGraff, extended the antenna, and held it out near the dome. After a few nice sparks had contacted the antenna, I set the jar down and touched the top. Nothing. Hmmm. It hadn't occurred to me that though I could draw a spark from the generator while being essentially ungrounded (so I thought) I needed a closed loop to get current from the jar. I tried repeatedly to charge it up, then set it down and touched it, only to get the tiniest of sparks. This was surprising, since the antenna was now hissing audibly. Discouraged, I picked up the jar and pushed the antenna in with my other hand.

It quickly became apparent what I had been doing wrong.

A friend was visiting after school that day but had previously left the room, apparently unimpressed with my efforts. After recovering my composure I extended the antenna again, charged the jar back up, and when he came back in I tossed it at him horizontally and said "Here, catch!"

For some reason the wonder of discovering how it worked was lost on him...

THE LIFE AND TIMES OF BOB TREMBLEY

Bob Trembley

I believe my interest in Science Fiction started in 1968 when my older brother (I have 4) took me to see 2001 in the theater. I was reading heavily throughout high school, and apparently provided much amusement to my peers.

In the fall of 1978 I started at Michigan Tech majoring in Physics (I was very interested in particle physics and philosophy at that time.) My parents had signed over to me the title to their 1974 Mustang. What a pig. I quickly traded it in for an orange Volkswagen bug with a stick (to my mothers horror.) I didn't know how to drive a stick at the time, but I picked it up in about 1/2 hour. That bug lasted me for most of my stay at Tech, and I have many fond memories of cruises to conventions and around the copper country, with my stereo blasting (covering up the sounds of my disintegrating engine.)

A couple weeks into September, I went to the Physics club party at the Houghton breakers. This is where I met Todd Johnson & Al Duester, and found out that there was a science fiction club on campus. I attended the next meeting. They quickly convinced me that I needed to go to a convention (what pals!) Somehow I scraped together the bucks, and late on Thursday night I headed off to Windycon (with nearly full bladder) in a overloaded car with bad shocks (again providing amusement to my peers.)

Windycon is where I meet such folks as Tullio Proni, Jeff Duntemann and the rest of the GT crowd. I think I went to 6 conventions that year, a feat that I didn't repeat the rest of my days in college. Near the end of the year I went to HoosierCon 1. I remember joining in on a massive paper airplane battle in the multi-level consuite with such folks as Todd Hamilton (a *very* new artist at that time.) This is also where I meet Mary Lynn Skirvin.

In the spring of 1979 I had my first computer course; FORTRAN on the Univac, with punch cards... OK, so the cards were a pain, but I enjoyed the programming aspect a lot. Because of this, and with the exposure to electronics I got from Al and Todd, I decided to change curriculums and transferred to Electrical Engineering (which may or may not have been a mistake, as I'm programming in C++ full time now.)

Near the end of the school year, Al and Todd asked me if I

would fill a vacancy in their 4 room apartment in the Dodgeville schoolhouse. I was surprised that they asked me, but gladly accepted. I went home that summer to work as a busboy (oh boy!) in a restaurant. Todd went to work at Fermi Lab as a plumber (at least that was what the letter he sent me that summer said.)

In the fall of '79 I returned to Tech to take up residence with Todd and Al at the Dodgeville school house. (In my opinion this is where the real fun began.) The "apartment" looked like a guest room in the Addams Family's house. There were interesting things everywhere you looked: The most amazing things stuck to the fridge, Al's analog synthesizer in the corner, con-art on the walls, a uranium brick on the windowsill. But there were no plants anywhere to be seen. I love plants, so I brought some of mine into that place. The most prominent was the corn plant that sat on the overturned wood cable spool in the middle of the room. Now that I think of it: how the hell did you guys get that huge thing into the apartment anyway?

I guess I have the kind of personality that tends to make people take great pleasure in (and go to great lengths to) pick on me. (Aaawwww poor me...) The term Sysfician (sys-ih-fis-e-an) was coined to describe me. For instance:

* I have this stuffed moose that the most horrible things would happen to. Chris Cloutier would shove it into the blender. Good thing we didn't have a microwave back then! Once, when I came back from Tech, it was suspended above my bed with rope tied to its 4 legs, a knife taped to the back side to make it look like it was through the poor thing, a pan underneath it with ketchup in it. (Eeeeeuuuwwwww!)

* I was in my room with Alisa (my girlfriend at the time - long story) and heard snickering from out in the living room. I then heard that *whatever* sounds that she and I were making were also coming from the stereo in the living room... Amplified! "What the hell!?" I said, more snickers from the living room. After a short search, I found a small FM transmitter magnetically stuck to my night stand. I pulled it off and went into the living room and got several "Who, us?" looks... Yea... You!

* One night, just after getting back from the campus, I went into my room to find a set of women's undergarments strewn around my floor, and what looked like a person in my bed. Upon closer inspection, the blonde hair was just a wig, and I found out later that the underwear was from a woman who lived down the hall. I wonder what they said then they asked her if they could borrow some of her underwear... Hmmmmmm...

* We were building the PFRC snow statue one winter carnival night, and I had pulled my car up close to the site so I could provide some music. When I came back outside after warming myself, there was a quarter inch of solid ice covering my entire car. Hehehahahoho..

* I turned off the light to go to sleep one night and shortly thereafter heard a "tic" sound near my pillow. "Huh?" I said as it happened again. I rolled over toward the sound and got hit right in the face by a drop of (what I hoped to Gahd was) water. "Oh great we have a roof leak" I thought. But no, there is an apartment above us. "Oh great they spilled something real big, and it isn't water!" I thought. So I turned on the light and looked up (getting hit in the face again,) but there was no big stain in the fiberboard ceiling piece. "Huh?" again. I stood on my bed and used my hand to scan the board and ran into a needle sticking down through it. I watched as a drop of water formed on its tip and let go, onto my pillow, where my head was supposed to be. I pushed the board up and found a syringe with a funnel stuck in it, and ice cubes in the funnel. Wise guys!

The fall of '79 is also when I was introduced to gaming. I have always had a love for astronomy and Alan Nuss was refereeing Traveller, a science fiction role-playing game set in the far future. I started playing it on a regular basis. I was introduced to D&D by Eric Jones, Larry Brader, and an instructor at Tech who shall remain anonymous. Said instructor wrote D&D adventures under a pen name and I got to playtest them before they got sent to the publisher.

I then started playing AD&D with Larry Brader on a fairly regular basis. He also introduced me to hypnosis. There is an infamous story about Larry hypnotizing me out at Dodgeville and taking me on a D&D adventure. What I have never told anyone about is the fact the I have 2 distinct memories of that adventure. I can vividly remember the robed wizard choosing a wand to zap me with, and I can also remember Todd frantically searching for a kitchen utensil to be used as a wand. I remember slaying the Awful Dragon in its lair, and kicking it as it lay dying. I also remember (with some satisfaction I might add) kicking Al Duester in the ribs. (Now Al, remember; that was a *long* time ago :)

By my third year at college, I had learned enough to build annoyatrons(TM), but what I really wanted was a flash blaster. Todd had this really cool one that had 1/2 of a krell circuit in it. After the flash, the barrel of the blaster looked like it was cooling down. So I gathered the parts, which meant purchasing most of them from Al Duster's electronic surplus store that was set up in his room (his room was always quite amazing.) The night before the con came, and all three of us were up late working on projects we wanted to take with us. At about 3:00 am I was ready to test my flash circuit. The scene was tense. My eyes were red. My body was shaking from too much caffeine. I hooked up the batteries, and all of the magic blue smoke came pouring out of my circuit. As we all know, electronics don't work if the magic blue smoke gets out. I went to bed. S-t happens!

Stage Wars: We did an SF Play; I played an overgrown EverReady Bunny sporting a flash blaster, speaking threateningly in Pig-Latin, with a tribble pinned on my butt as my cute little cotton-tail. Truly, the highlight of my college years.....

On our last year together in Dodgeville, Todd and I wanted to pull a practical joke on Al. Todd had this huge knife switch that whenever Al would see the contact off of the vertical, he would gripe and throw it. Well, what a splendid opportunity, we thought. Todd concocted some explosive mixture and we were going to use the knife switch as the trigger. We hung the charge outside of the window (so as not to damage the inside of our apartment) and wired it up, laying the wires on top of the hung ceiling. Unfortunately, when Al got home, he didn't throw it. Then, as he climbed onto his loft (which he built up to go through the hung ceiling) he spotted the wires. We heard "Guys, what're those wires above the kitchen...leading outside? Hmmmm?" Sigh!

Every Spring, Tech puts on "Tech Is." Campus organizations are encouraged to set up displays telling who they are and what they do. In the spring of '81 the PFRC got a room on the first floor of the MEEM (that really tall strange looking building.) I was manning the room for an hour or two and talked a couple students, one of which was Connie - who had real short hair. I didn't think twice about her at the time, she looked like a freshman and I *did* have a girlfriend after all...

After that year, (the summer of '80) I stayed up at Tech year-round. I moved into Dr. Gary Agin's basement and brought my bicycle up from home. I cycled everywhere that summer, and loved it. That summer Larry Brader turned me onto comic books, and I have been collecting them ever since. Just before winter break ('80-'81) I was on my way to a class and ran into a friend, Vicki, in the student union. She was talking to a rather good looking girl with long curly hair. When our eyes met, they locked, and neither of us could look away. Vicki was rambling on about something, neither one of us hearing it, and I asked her, without looking away from this girl, "Aren't you going to introduce us?" The girl said "Oh, we've already met." I think I said something intelligent, like "Uhhhhh...." It was Connie! I asked her out that night, and we went on out first date to see "Escape from New York" at the Lode theater downtown. The next night we went to the PFRC Christmas party; Talk about sensory overload on a NEO! Todd was wearing his moose mask, there was a D&D game going on in one corner, electronic music was playing, and a couple of long haired hippies were there. The next week, I wanted to take her to a PFRC meeting. We had got there a little late, and she was nervous about walking in after the meeting had started. So Kevin Kinnell darted out into

the hall and hefted her onto his shoulder (she weighed 109 back then...) and carried her, butt first, into the meeting. My, what a pretty shade of red she turned!

We started dating and I soon split up with Alisa (again... or she split up with me...Long Story) By the beginning of spring we were pretty much spending *all* of our time together. We became known as the "BobCon entity." One day, we were sitting in the Union (which the entire PFRC did, a lot,) and this girl came up to Connie and started to talk to her. She used short sentences and her demeanor seemed to be nasty. After she left, I commented to Connie "Geez, what a Bitch!" She looked at me and smiled, and said "That was my sister." I think I said something intelligent, like "Oops..."

For "Tech Is" (spring '81) the PFRC brought up James P. Hogan for a presentation. The turnout was disappointing, but the talk was very interesting. Hell, I got to meet him! We had a party at Dr. Agin's place, and that is where the picture of Jim Hogan and *every* female in the PFRC, laying on my water bed, was taken. I thought my bed was going to burst!



James P. Hogan and a bedful of his femme fans.

Connie started to go with me to D&D games. Once, We went to the Tech instructor's house to playtest another D&D module and cook a Chinese dinner. The dinner was wonderful, and house rules were that you *had* to use chopsticks. The game was fun, except that I drank too much cheap Gallow wine, and got sick. I promptly earned the nickname "The Gallow Kid." Another proud moment in my college life.

We also started playing D&D with Dave and Doug Ifversen and several others, Dave was the Game Master - lot's of fun! We met on Saturday nights after the PFRC meeting, so we called ourselves the "Saturday night dessert club." Several highly caloric desserts were brought to Dave & Doug's apartment, and we all gorged ourselves before we started to play.

In the spring of '82, I was elected President of the PFRC for the '82-'83 school year. Connie was elected secretary (no we did *not* plan it that way.) At the time I thought it was great, but let me tell you: "Never get elected into a presidency of an organization (and I use the term loosely) during your graduating year." I think I was a fairly mediocre president at best; there was a lot that needed to get done, and I always used a list and went down through it during the meetings. Seems like the logical thing to do, but I don't think that the meetings were nearly as fun as they could have been. The one big thing that happened during my presidency was that we brought up Mike Jittlov to give a presentation. In all fairness, Bob Yeo and Colleen Kobe (Corpe) should get all the credit; they did a huge amount of work to try and get him up there.

Connie stayed up in Houghton over the summer of '82 and got a job working at the newly opened Burger King. We did a *lot* of camping. The most memorable time was when Eric Jones, Kevin Kinnell, and myself set up camp somewhere on

the hill opposite Houghton while Connie was working. After her shift Kevin and I went back to pick her up and brought her back to the campsite in the pitch dark. Using our flashlights to illuminate the way through the "woods," Kevin said "Now follow *right* behind me and don't go off of the path." The next day, when we were leaving, she saw why he said that. At one point, the path was only 3 to 4 feet wide with *real* steep slopes on either side. She was none too pleased with us.

In the fall of '82 I joined the Karate club. I stayed with it 3 years (right up until we left Tech) and made the rank of Green Belt. I was in the best shape of my life (165 lbs) and felt great. I started refereeing my first Traveller campaign in the fall, that continued on until we left Tech.

In October, Connie and I decided to move in together. We rented an "apartment" above the Elias Brother's Big Boy in downtown Houghton. Neither of our parents were too thrilled with the idea, that's why we told them *after* we had moved in. On thanksgiving, Connie and I decided to get engaged and announced it to the group at the Saturday Night Dessert Club meeting.

Around January of '83 (right before I was supposed to graduate in Electrical Engineering) I came to the realization that I really did not want to be a hardware jockey, I wanted to do something (but I didn't know what) in the field of Computer Graphics (which kinda implied Computer Science.) I did some investigation and found that getting a degree in computer science would not take that long for me because several of the required classes overlapped with what I had already taken for my EE degree.

We went to Minicon that year and had our "official" engagement party (the date had been set.) We were planning on going to D. B. Kaplins with a small group of friends, but as it turned out about 30 showed up.

I took a CADAM (computer drafting) class as an elective in the spring of '83. I killed 2 birds with 1 stone, because the project I drew up for the CADAM class was the schematic I needed for another. I started hanging around the Graphics Lab quite a bit and the management let me use the system when the load was low.

I graduated in May of '83 with a BSEE and had nowhere to go, not that I wanted to leave anyway! My graduation was an experience I rather forgot due to some family difficulties I was having at the time. If you want to know about the story, ask me, I really don't want to write about it... I wanted to take the summer off, as I had been in school year-round for 3.5 years and was burned out. Connie took on another part-time job as a maid at that little motel right next to Tech on US41, so we could pay our bills, and I could goof-off.

Over the summer I used the CADAM system quite a bit, and got pretty good at it too. I drew up several floor plans for starships and buildings to be used in my Traveller campaigns. Management *was* noticing, and I threatened that I was going to be a pest until I got a job there as a lab assistant or student programmer. One day in August, management approached me with a proposition: a grad student needed some chemical diagrams drawn up for his thesis, so they told him about me. I agreed to do the job, and got \$100.00 for it. That is probably what got me hired at the Graphics Lab as a lab assistant in September.

I worked as a lab assistant for 3/4 of a year, and then was "upgraded" to a student programmer. Over the summer, they really didn't have much for me to do, so they told me to "do whatever the hell you want, if it produces something we can display or demo, great!" I was getting interested in fractals (a brand new thing at the time,) so I wrote a couple fractal generation programs in FORTRAN, and some of the printouts were indeed displayed around the lab. I was getting to know the system pretty well by then, probably what management had in mind all along.

We found out about 2 weeks before we got married that Connie was pregnant. When Larry Brader found out, he looked at me and said "You, a father? Boooahh Haaa hahahahaha!" (Who's laughing now, Larry?) We *did not* tell my parents,

and we were worried about telling Connie's, but when we did were not expecting the "That's Great!" that we did get.

We got married 8/4/84. It was hot and muggy. While Connie was saying her vows, she watched a bead of sweat slowly crawl down my face, and almost lost it. We saw a bird flying around within the chapel during the ceremony. 'Ya know, they say that a bird in the chapel is supposed to be good luck. But it was flying *right* over my mother, who was wearing a dark dress. <Grin>

Our "honeymoon" was spent with several friends at Gary Gielincki's house on Higgins Lake. Not exactly what one would call a "normal" honeymoon, but we were still poor college students, and it *was* on the way back up to Tech. Besides, it was a lot of fun.

Through the fall, Connie was getting larger, and I had to begin thinking of how we were going to afford this child. I couldn't see it happening with my current \$4.00/hour position as a student programmer. So I began going to the job fairs on campus and going to the placement office to look for a "real" job. What I really wanted to do was get a staff position in the Graphics Lab, but there were none to be had "at this time."

A friend (who we have had a falling out with...long story) got me an interview at a small insurance agency in Grand Rapids that had a growing programming sideline. I also got an interview with an electronics firm in St. Louis. One would think that that would have been the better of the jobs, but it was far away, and they wanted me to design computer control systems for missiles. I think not.

After the interview in St. Louis, On the plane going back up to Houghton, we were told that there were some "technical difficulties" and we would have to make other arrangements. Great! Just great! We were ushered off the plane, and on the way out I looked into the cabin. There was this huge crack in the pilots windshield! Conjures up all sorts of hideous imagery, doesn't it? I had to make a detour, so I decided to go through Detroit and stay with my in-laws for the night. I then took my first (and last!) prop driven commuter flight to Flint's Bishop airport to see my folks. Finally I got a flight to Houghton. Now that I think about it, that was the last time I've been in any planes.

In February of '85, I decided to take the job in Grand Rapids. They wanted me to start right away, but Connie was terrified that she would go into labor on the trip down. We decided to have me go down and look for an apartment, and get things started. The agency said that they would get me on the first flight to Houghton when Connie called to tell me she was going onto labor. I wasn't too thrilled, neither was she, but that's what we did. She stayed up in Houghton and finished packing the remainder of our belongings.

Two weeks later, she called, crying, saying she could not stand it any longer, "come and get me, NOW!" So my friend and I rented a U-Haul and drove it up to Houghton. The next day, *several* PFRC members helped us pack the truck. We mapped out the location of all the hospitals along the way, and tearfully left Houghton. (Geez, I've got tears in my eyes as I'm writing this!)

I soon discovered that some of the expectations of my employer were way off base. I was also not allowed any sort of learning curve for the new system or programming language. After working there for around 2 months, I came in one day and was politely told that "my skills would probably be better suited to a more technical business." I was handed a paycheck and shown the door. Connie was thrilled!

The very next day we had an appointment at the hospital, and as Connie was 2 weeks late, the doctor induced labor. Rachel Marie was born 3/27/85 at 8:34 p.m.

The next couple of weeks were spent on a letter writing spree. I was trying to find something in the Grand Rapids area, but Detroit had a lot of high tech industries. Eventually I got an interview with EDS (who had *just* come to Detroit, and was hiring everyone and their brother.) That led to another interview at the GM Tech center in Warren, where I was

offered a job. I called Connie to tell her, and she said that the Michigan Tech Graphics Lab had *just* called and offered me a staff position. Arrgggh! If it had been offered to me while I was up there 2 months earlier, I would probably still be up at Tech today, and my kids would be true "UPers." Alas, EDS offered be \$5000 more so I took the job in Warren.

We moved from Grand Rapids to Detroit and stayed with Connie's parents while we looked for an apartment. Grandpa didn't mind... After about a month we found an apartment at 16 mile and Groesbeck and moved, again, into there.

At EDS I was quickly becoming competent at PC troubleshooting and software installation. So much so that several customers asked for me by name, which pissed off my boss because the department was supposed to be "a team." So sorry! I was also put in charge of a special CADAM project because of my "prior" experience.

After a year in the apartment, they wanted to raise our rent \$75. So we started to look for either another apartment or a house to rent. What happened still freaks me out. We rented a house owned by the church / school that Connie had gone to as a child, and it was in her old neighborhood. The previous tenants had left the place a real mess, so we made an agreement with the church to fix up whatever we thought needed fixing, and have the money deducted from our rent.

The second floor of the house was all one huge room, and the paint was peeling off of the walls in strips. It was taking us a long time to peel it off, so we thought to ourselves: "Selves, let's con our friends into doing this for us!" And that is just what we did. We held a "paint peeling party." We supplied the pizza, and got several friends to come over and yank the paint off of the walls. Guy Wicker won the award for the largest unbroken piece. I have some pictures of the event, and let me tell you, it looks *real* strange. But you're used to that.

We have this habit of having *lots* of friends over on Friday nights for gaming and general silliness. A couple of days after one such party, Connie received a strange letter in the mail. It was made from cut-out letters from magazines, and she was real worried, until she read it. Then she was just confused. The letter said something like: "If you want to see the moose again, come to <some address> at <some date>, or else!" Connie called me at work to tell me about the letter, and I asked her to go into the bedroom and look on the bed for my stuffed moose. It was gone! Kidnapped at the party! Eventually I discovered that Tom Snoblen was the culprit, and I went to a party at his house to retrieve it. Tom wouldn't tell me where it was, but said it was out in the open and in plain sight. After searching what seemed like every nook and cranny in his house, I found the poor thing, wrapped in duct tape and suspended high up in a corner of his living room! Why me?

Connie was pregnant by the time of ConFusion '87, and was having troubles. We missed the con entirely because she was not allowed to exert herself. Saturday night we opened the house for folks to come from the convention and eat dinner. It was then that we found out that these same friends had pooled their money and won an auction (whose proceeds were to go to Kelly Freas, whose wife had recently passed away.) Timothy Zahn was going to put the winner in his new book, Deadman Switch, and kill him. This group of *friends* wanted *me* killed off in the book. How Nice.

That same night, Rachel got into a purse and ate some Advil tablets. We didn't know how many, so I had to run out to the store to get some serum of Ipecac. After waiting over an hour for the first dose to take effect, we gave Rachel another, and ran her around the room, and played "throw the toddler" and "swing the toddler upside-down" for 2 hours. "Weeeee!" Rachel thought it was great! Not quite the reaction I was looking for. So it was off to the hospital with her to get her stomach pumped. But wait! There's more! Connie started cramping *real bad.* So it was off to the hospital with both of them, leaving all my guests at the house... Connie miscarried that night, and I could hear Rachel shrieking through 2 sets of closed doors as they strapped her down to a board and pumped her stomach. After all this, the Ipecac kicked in...

Around this time, my department within EDS was having financial difficulties, and decided to move me to another department. I don't quite understand their reasoning, because I was constantly getting billable service calls. But, they thought that I needed some mainframe database experience. I thought it was time to leave, so I started to look for another job. Guy Wicker got me an interview at Ovonic Imaging Systems (OIS) in Troy. I talked with 3 people, and was offered a job in short order... and took it.

I started off in, of all things, my college major. I was redesigning a custom SCSI controller to insert into the ISA BUS of an IBM PC. The controller handled data flow from a prototype electronic dry-erase board. The controller software was written entirely in assembly language, and circuit was modeled using the OrCad schematic design program. I was even able to debug timing problems before the physical circuit was even wire wrapped. After the prototype was built, I used an HP logic analyzer to debug the circuit. I must admit the entire affair was a lot of fun.

After the project was over, I was yanked into the software development team by Marvin Barnes, the director of software engineering. I had to learn "C" and the Windows Software Development Kit (SDK) at the same time (Windows was at version 1.04 at the time). It took a while, but I started to get the hang of it. I was lucky because I had several experienced coworkers to ask for help, including John Lussmyer and Chris Oesterling.

We were developing a scanned-image document database for the hand scanner that OIS was developing at that time. During our development we had several all-nighters (that we called gang bangs.) Sometimes they were actually fun, other times..... Windows 2.1 came out while we were developing the database program.

In the winter of '88 Connie was pregnant again, and all the programmers were joking that I would get laid off the day after the child was born. As it turned out, we were *all* laid off 2 weeks before... The programmers and Marvin agreed that the program we were working on was too cool to see shelved, so we decided to form our own company and continue on with it. After long negotiations with OIS, we got the rights to the software, and worked out a business plan. We found some investors (probably our biggest mistake,) and formed ImageTech.

Amanda Kathryn was born 8/18/88 at 18:18 (6:18 p.m.) All the programmers warned me not to have any more kids because of the "Trembley Curse." I started up a new Friday night Traveller campaign while I was at ImageTech, which included John Lussmyer, Fred Robinson, Chris Oesterling, Gary Gielincki, Gabe & Audry Helou, and Connie...

At ImageTech, we continued to work on the database program for almost a year and a half. We were usually always having cash flow problems of one form or another, and in the Winter of '89-'90 a buyout offer was in the works. After we got back from the Christmas-New Years vacation, the deal still had not been worked out and then fell through. Marvin Barnes, then the director of software engineering, announced he was quitting and re-forming his consulting company.

Fed up with the uncertainty and politics I asked him if he could use me as a programmer. He said yes, and I resigned from ImageTech. Barnes Consulting was formed in January of '90, and we started working immediately on a contract. Initially, we were working out of Marvin's home in Troy, but soon leased an 8th floor office overlooking the I-75 & 16 mile (Big Beaver Road) interchange in Troy. A second project came along that I think was one of the neatest I've ever written: a multi-user networked scanned document manager. The database was written using SQL, and we built some workgroup management features into it.

I got to build most of the PCs we were using (I love doing that!) and set up the Novell network. We got onto the Beta program for Windows 3.0 and did all of our development using the updated tools. It was so much better than Windows 2.1, I can not begin to tell you.

One afternoon, while I was at work, I got a frantic call from Connie. She was babbling something about "Come home

now!" and "Amanda's been run over!" and "I'm going to the hospital!" I got into my car, numb, and made it to the hospital (near our house) in record time. Amanda was in an exam room, bouncing up and down on the table, jabbering up a storm. She had a rather large knot on her head, that only required a couple of stitches. We were real lucky (if you can call that luck.)

What had happened was that Connie and Amanda were over at our neighbors house. Amanda was playing out front with several other kids, and was hiding behind some large bushes. The husband of the house, after shooing all the kids out of the driveway, was backing his truck out and Amanda bolted from behind the bush and got knocked in the head by the rear bumper. The truck literally drove right over her, and we think she tried to sit up and got hit again by something in the undercarriage.

My 30th birthday was coming up, and I suspected that Connie was going to try and pull something on me. I told Marvin as much (which was my big mistake, because Connie had invited him too.) I came home from work, and drove down my street to see if I could recognize any of my friends cars. Nothing. OK, so I parked on the street behind ours and came in through the back way, expecting to see everyone in the kitchen. Nothing. Hmmm. So I walked through the front door and there was Connie and her parents. Just Connie and her parents (I should have been tipped off by the fact that the house was spotless...) I went into my bedroom to get changed, and when I came out there were 20 people in my living room, and over-the-hill decorations everywhere. They were all in the basement... Connie had them park a couple blocks away, because she knew I suspected.

By the spring of '91 we started looking for a house to buy (we were having problems with our psychotic next door neighbor ... long story.) We eventually found the one that "felt like home" when you walked in and started the paperwork. We went FHA, and the inspector told us we needed a new roof. Not wanting to spend money that we didn't have, we decided to con our friends again. For the payment of pizza and beer, we got several of our friends to help lay down a new roof. Very little else had to be done, other than the requisite painting. The one thing that sticks out in my mind about the move is the first night we were going to spend in the house. I had set up the girls waterbed, and it was getting late. Amanda came up to me and asked "When are we going home?" I looked at her and told her "This *is* home." The look of utter confusion on her face was priceless.

We went to our first WorldCon in Chicago that year (I think it was '91.) We shared a room with Todd & Mary Lynn, and Paul & Dawn. One night they all decided to crash early, but I've always liked to wander around at cons late at night. Every time I came back to the room to get something, they were still up, gabbing. At 3:00 am I decided it was time to crash, and when I opened the door I was greeted by fits of hysterics from within. I tried to go to sleep, but it seemed that any statement made by anyone brought on more fits of laughter. Exhausted, I think we all fell asleep around 3:30.

Shortly after the con, Windows 3.1 and C/C++ 7.0 went into beta. I got myself signed up for both as a "Home-Office" user. The real nice thing about being under so many beta programs is the 3 linear feet of 3.5" disks that were sent to me. Getting the final shrink-wrapped version free is nice too... This is when I started to teach myself C++.

In January of '92, Barnes Consulting was having problems with cash flow. Marvin decided to close the office to save on overhead, but wanted to keep the current contract that we were working on. He suggested that I form my own consultancy out of my home and he would sub-contract work my way. It sounded good, and Cyrcle Systems was formed. The sub-contracting scheme actually worked for 2 months, then the customer backed out, axing the cash flow. I started to look for other places to offer my services. I found a Windows programming shop in Troy, and made an appointment there. Much to my surprise, they offered me a full time job. I didn't have to think about it very long at all...

I started working at Fourth Wave Technologies in April of

'92. I told them that I was a "C" and Windows programmer, and a darn good one. So, what did the director of software engineering, whom I'll refer to as Dick, start me writing? A Windows Virtual Device Driver (VxD,) using the Device Driver Development Kit (DDK) that I had never seen before, and 32-bit assembly language (that I had not programmed in for years.) Absolutely *nothing* to do with Windows programming. I *was not* pleased. I also found out that the project I had been put on was due to be delivered to the customer 2 weeks before I had been hired!

Several times I thought I was done with the project. I'd save off my source, and clean up the desk, and then the Dick would come and tell me "OK, now we have to ..." Very frustrating. Eventually another important contract was signed and I was moved off of the VxD and onto it. Finally, something I knew how to do... Only problem was that the customer (who knew nothing about "C" and Windows) was trying to tell me how to write the program. Finally after 8 months of this, and getting chastised for reading trade journals, I had had enough! I started circulating my resume.

I was so stressed out at this time that it had begin to affect my refereeing of the Traveller campaign. I was burned out. Besides, I hadn't run a character since college! So Ken Farmer (introduced to us by Gabe Helou) started refereeing GURPS (Steve Jackson's Generic Universal Role Playing System.) Unfortunately, a month or so later, he got a job out of state. So Gabe took over and started refereeing GURPS.

In December of '92 I got a call from CDI Computer Services (a contracting firm based in Madison Heights). They had an opening for a Windows Programmer and wanted to see me yesterday. I phoned in sick, one Monday morning, and went out to the client (Ford Motor Company in Dearborn) for an interview. They were actually looking for a Windows programmer, and someone else to do some imaging work. When they found out that I had experience with both (and REXX) they offered me the job on the spot. I made it clear to them that ties and I do not get along in the least, and they had no problem with that (heheheheh.) CDI also did not have a problem with me working out of my home office (as Cyrcle Systems) on off hours (and yes, I have that in writing.) I've been (very) happily working at FORD (through CDI) since January 11, 1993. It's the best job I've ever had, and they have literally years worth of projects for me to do. My boss is a programmer (recently turned manager,) so he *understands* what it takes to do programming, *and* he's a closet fan! It's wonderful!

Finally, Gabe was getting burned out from refereeing, and I was itching to start up again. So he turned the game over to me and as of this writing I've refereed 3 games.

I have a zillion software project ideas I'd like to do, but with work, the house, and the kids, I never seem to have any time. Ha. I'm helping Connie, who is Rachel's Girl Scout Leader. In order to do this I had to, =ahem=, become a registered Girl Scout....

UFO PANIC MADE TO ORDER

Dermot Dobson

A couple of years ago Richard Branson (eccentric owner of Virgin Atlantic Airways and transatlantic powerboat racer) was fined for scaring the s**t out of a small town in central England by flying over it in a hot-air balloon loaded with strobe lights, revolving spotlights and sound effect generators. He was doing a test flight prior to the real thing which was to be a novel way to gatecrash a friend's garden party with a UFO landing. Unfortunately he got a bit close to a motorway on his test flight and locked up the cellular network with panic calls. (He lives in an old manor house with recording studio attached, only a few miles from here. Maybe we should offer him a GT membership!!



SUBTERRANEAN GLYPHS

Todd Johnson

Seen scrawled on the wall in Fermilab's Main Ring tunnel:
"One ring to rule them all, and in the darkness bind them..."
Also seen on the tunnel wall: "Arne Saknussemm".

CHANCE OF SHOWERS

Todd Johnson

We were somewhat fond of playing practical jokes on Bob Trembley, mostly because he usually took it well. One night in particular, he was out for the evening, and Duane Corpe and I were suddenly struck by an inspiration. We went into Bob's room and, using a crude plumb bob, marked the point on the ceiling tile directly above his pillow. The tile was removed and we inserted an oiling syringe with a small metal capillary through the back of the tile at the point we had marked. We removed the plunger and substituted a small funnel with an ice cube in it, and carefully reinserted the assembly back in the suspended ceiling. We knew Bob had an early class and would return soon, but we were all asleep when he did.

The next morning I got up and peered into Bob's room. Most of the tiles had been removed from the ceiling and my funnel and syringe were nowhere to be seen. Some time later, when I got him to talk to me again, he recounted his ordeal:

He had gone to bed laying on his side and was almost asleep when enough of the ice had melted to force some water through the capillary. He heard a light tap on his pillow behind his head, then another. He turned to try to localize the sound, and the next icy drop caught him right between the eyes. Searching for the source, he apparently ran into the nearly invisible capillary with his hand but was I believe unpunctured. (Sorry Bob, we should have made it flush with the ceiling.)

He still has my syringe, 12 years later now...

HYPNO-ROLE PLAYING

Todd Johnson

Our friend Larry Brader had among his talents a knack for hypnotism. He and Bob Trembley had been doing a series of experiments in improving memory retention through hypnotic suggestion, ostensibly for use during final exams, and Bob had become accustomed to "going under" rather quickly. One night they decided on a more recreational experiment, and explained to Al Duester and I that Bob was going on a D&D adventure while under hypnosis. Larry mentioned that he would be escorting Bob on his epic journey and anything we could do to go along with his descriptions of the adventure would make it all the more vivid for Bob.

They adjourned to Bob's room for about five minutes, then the Crusaders emerged. Larry was walking hunched over, dragging one leg, and acting generally obsequious toward his "master" as he described the great journey to the somewhat glazed Bob. "We must consult the great wizard, Master!" Realizing he was pointing at me as I stood in the kitchen, I went over and grabbed a black cape that Roxanne had made, threw it over my head, and tried to look ominous. Bob started to ask me where the treasure was but Larry interrupted with "You have angered the wizard, master! He's going to shoot a lightning bolt at you with his wand!" I looked around for my wand and noticed a pot on the stove with a wooden spoon in it. I removed the spoon with some amount of difficulty as it was sort of fossilized into what appeared to have been macaroni & cheese. Brandishing the crusty wand impressively, I aimed it at Bob and said something like "BWOOSH!". To my amazement the valient knight flew backward like he'd been shot and landed very fortunately on the couch, apparently unconscious.

Larry revived his master and they continued their quest



Todd Johnson menaces Bob Trembley as a powerful wizard.

through the apartment door and into the rather poorly lit hallway. Al had positioned himself on the stairs, preparing to be the best dragon he'd ever been. Our heroes approached the lair of the beast, and Al growled threateningly. I was following quietly at a safe distance and didn't quite see the blow that killed the beast, but I heard Al carefully sliding down the stairs and making "RAAGHH" noises like a dying dragon. Bob went down the stairs into the lair and examined the carcass critically as it tried not to giggle. "God, what a hideous thing!" He said, and gave Al a good kick to the ribs, apparently to make sure he was dead. Al didn't want to get kicked again so he stifled the more genuine "RAAGH" noise that tried to escape his somewhat collapsed lungs.

Bob's recounting of the adventure later was most impressive; An evil wizard shooting blue fireballs, treacherous terrain, and a hideous dragon guarding the treasure. I guess he'll be the only one who will ever know what the adventure was really like.

ELECTROLYTIC FIRECRACKERS

Todd Johnson

Our neighbors across the hall in the dorm were also of a techie bent, and they developed a novel method for generating satisfying explosions in the comfort of their room. They had a collection of fairly good sized capacitors, around 500 μ F and 500 volts or so. They would open their window, then charge up one of the caps with a small high voltage supply. They would then gingerly disconnect the capacitor, carry it to the window, and touch the terminals to the window screen. It sure sounded like a firecracker and the burning bits of screen descending into the courtyard below added a nice touch. Eventually this attracted the attention of the R.A. on the floor, who burst into the room and demanded they surrender their fireworks. He never did find any, of course.

BOOK 'EM, DANO

Mary Lynn S. Johnson

At the last Holland Berserker that Al Duester held, one of the Saturday night festivities included burning some magnesium down at the end of the driveway. The resultant bright-white fire and huge plume of grey smoke was not only great for casting long shadows, but also great for playing with lasers.

Todd brought his infamous 'Laserville Slugger' rifle out and fired it through the billowing shapes, making its 1mw HeNe beam very bright and quite satisfactorily visible. Then, he moved to the very end of the driveway and aimed through the magnesium clouds that were dispersing down the street. He pot-shotted several street signs and driveway reflectors before he noticed that something was arcing inside the case.

Just as he was about to go back in the house and try to find the problem, a police car pulled up and two officers got out. They approached cautiously and asked the assembled GT throng what was going on. I told them that we were burning a little magnesium and that we'd be done soon since it was nearly out and we didn't have any more.

"That's not the problem," said the younger of the two officers. "One of the neighbors reported that someone had a gun."

"Oh, that!" I laughed. "That was just a laser."

Now remember that back then, laser gun sights didn't exist and lasers were viewed largely as something only encountered in a laboratory. The cop responded by asking, "What's that?"

Todd showed them his silver laser rifle and their eyes narrowed a bit. They wanted to know what it could do.

"Here, I'll show you," Todd said and he took aim at the tail light reflector on the patrol car. The cops immediately put their hands to their service revolvers but calmed when they saw the pretty red reflections. We explained that it only pretty red light and was by no means powerful enough to do any harm. It took some convincing but they finally bought our story and turned to go.

"Are you going to be doing this long?" They asked.

We told them no, and then they left.

I can't help but wonder how different this scenario would be if played out today, with how gun-shy everyone is...

DAN CRACKS THE COSMIC CODE

Bill Higgins

About ten years ago there was a Silly Science Fair held as part of our local science fiction convention. Entrants were encouraged to create bogus or parody science projects.

Dan Cohn entered one whose centerpiece was a recording of the "cosmic background radiation"—the microwave hiss of 3-degree-Kelvin blackbody photons left over from the early moments of the hot universe. It sounded like this:

"Sssssssssssssss..."

Dan claimed to have applied advanced forms of signal processing to this (apparent) noise, and after all his fancy algorithms and equipment had worked on the background radiation, the tape sounded like this:

[faint voice over background hiss]

"The time...

at the bang...

will be Zero...

exactly."



STALKING THE MYSTIC FOSSIL

Edwin L. Strickland, III

I work at a small high tech company in Austin, Texas, called Scientific Measurement Systems (SMS). We make and sell CT (Computed Tomography) scanners for industry. They are equivalent in concept to the scanners used in hospitals, but industrial scanners generally provide higher resolution and operate with higher X-ray energies than medical scanners do. A big scanner we have out at the Rocketdyne facility north of Los Angeles has a 2 MeV linear accelerator X-ray source, and can take an end-to-end cross-section tomogram of a complete Tomahawk cruise missile jet engine.

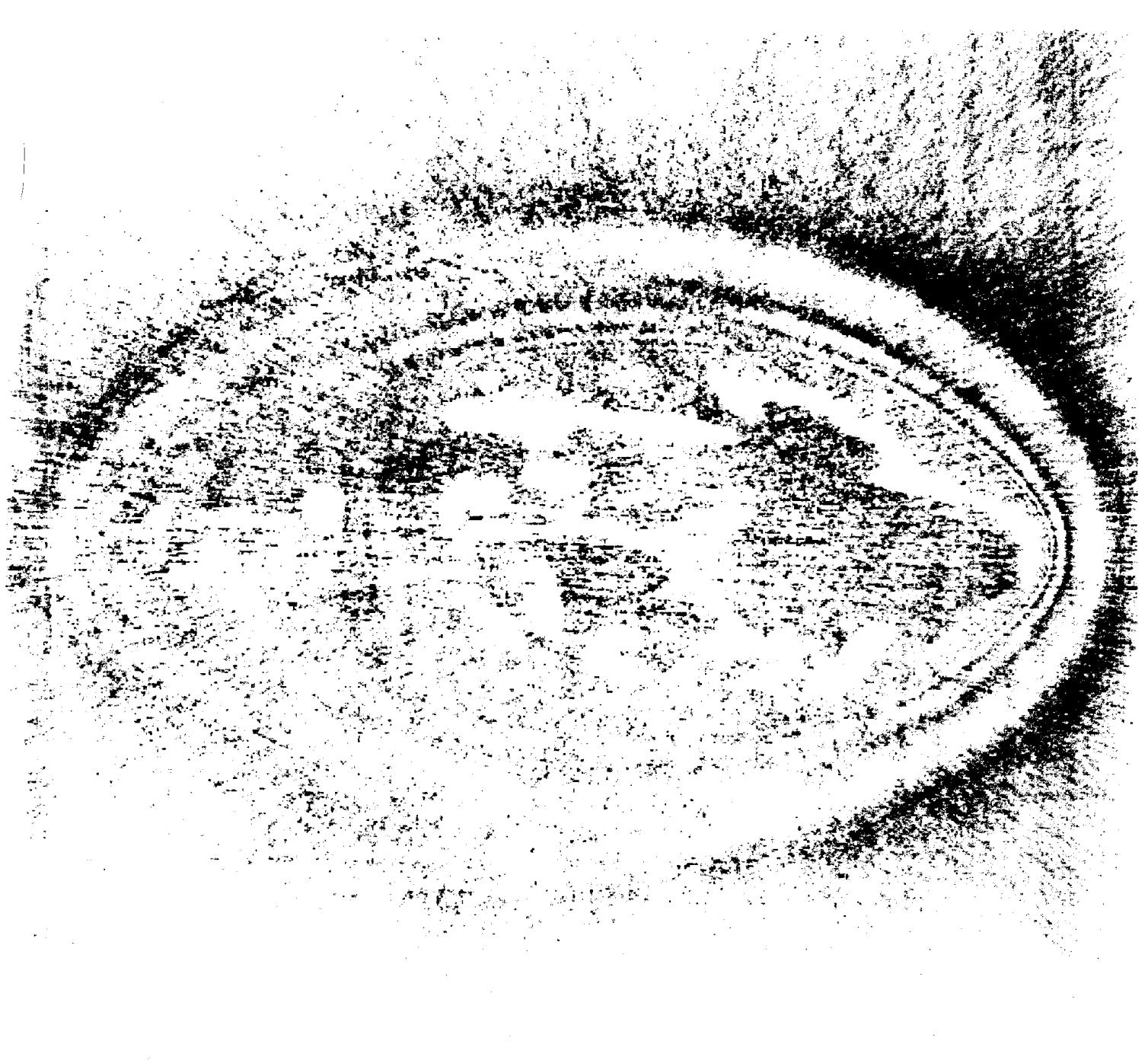
My job position is called "Image Processor/Analyst". Basically, I'm an image-hacker. An old definition of a computer hacker is "An obsessive computer hobbyist who trains computers to jump through hoops". What I do is take raw images and clean them up; then I do various types of special processing and enhancement on them, so you can see things in them you can't see (or can't see well) in the raw versions. In other words, I make images jump through hoops.

Besides making scanners, we also do commercial and demo imaging for various customers. Some of the damndest things come through for scanning. Jet engine turbine blades, space shuttle parts, circuit boards, high-tech composites, auto air-bag detonators, things from atomic energy companies that we aren't supposed to ask what they are, gyroscopes for Titan-Centaur rockets, oil-well core samples, simulated drums of medium level atomic waste, . . . , you name it. Last year, we scanned a 185-million-year-old roadkill.

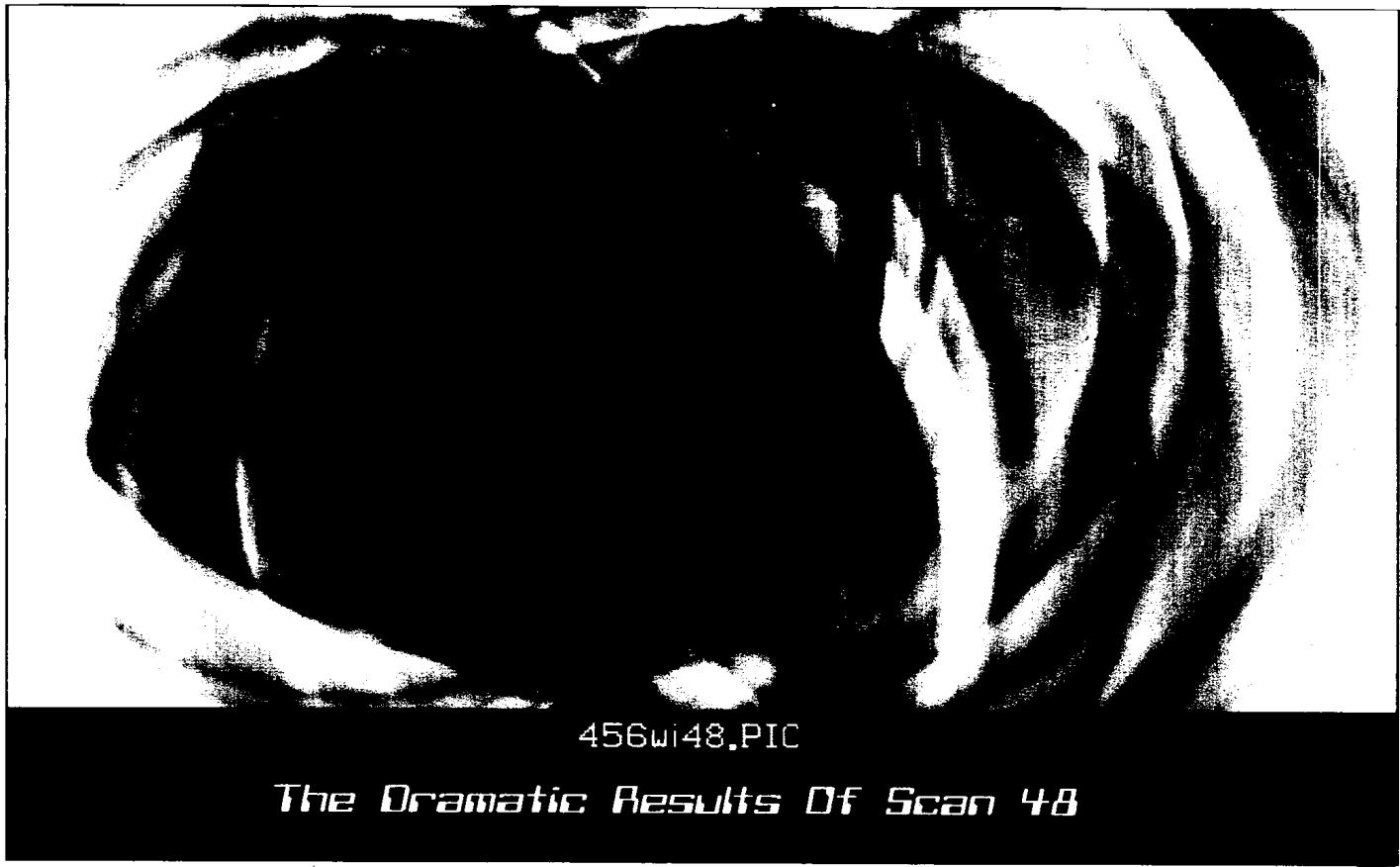
Here's the story. Back in March, '92, paleontologist Tim Rowe, of the University of Texas at Austin's Vertebrate Paleontology Lab, brought some samples by for us to try scanning. One was a 240-million-year-old skull of the early mammal-like reptile *Thrinaxodon liorhinus*. In real good condition, about the size of the skull of a small cat, with sharp, nasty-looking teeth. Very close to the common ancestor of reptiles and mammals. We named him "George", after our company's chief financial officer, another old fossil of limited cranial capacity and bad disposition. We did some test scans, which came out great, and then did a complete 3-D series of scans of the skull, with .2 mm resolution in the images and .25 mm spacing between slice-planes. The Ginsu Tomographic Scanner! It Slices! It Dices! The entire data, including animated "movies" that flip through stacks of cross-sections, is being published this fall on CD-ROM by the University of Texas Press. Be the first one on your block . . .

The scans of *Thrinaxodon* came out so well that Tim brought by another fossil to scan: we named it the "Roadkill" on first sight. It was the 10-inch-long skull of a true dinosaur, named *Syntarsus kayentakatae* (after the Kayenta sandstone that forms a massive ledge in the Grand Canyon; and after Katie, the wife of the rancher on whose land the first one was found. Oh, don't ask me about the genus name.) This skull had been squashed from side-to-side during fossilization, so it looked like a few heavy trucks had gone over it. Not too gross, just decidedly flat and very toothy.

We did a test scan through the skull and ran into a real problem. Most of the cavities in the skull were filled



Artifacts of image-processing--
or a psychic message from 185 million years beyond the
grave?



456wi48.PIC

The Dramatic Results Of Scan 48

with muddy sandstone, and some of the sandstone was as dense or denser than the bone in the image. Couldn't tell them apart. Here's where the hacking came in. When we did *Thrinaxodon*, the scan operator first did some test scans to see what X-ray source voltage produced the best image. I had been wasting time, screwing around, and I found that if I took images scanned at two different energies and did some image processing magic on them, I could make the sandstone essentially disappear. The reason was that the ratio of the opacities of the bone and sandstone was different in the two images. This wasn't important for *Thrinaxodon*, because all the bone was denser than the sandstone, but we tried it on the roadkill, and it worked like magic. I could completely separate bone from sandstone. Unfortunately, like all magic, there were drawbacks: You had to do two scans instead of one, and they had to be long-- 20 minutes each-- because the contrast between bone and sandstone was only about 3.5% and we needed long scans to get high enough signal-to-noise ratios in the processed 2-energy image. Let's see: 239 pairs of scans at 1 mm intervals, from the back of the head to the tip of the nose. It came out to about three and a half days of round-the-clock, 3-shift scanning!

Now to back up a little. When we processed the test scans taken with two energies, something odd showed up. The cross-section image of the skull was surrounded by a series of oval halos, getting closer together and fainter as you went in toward the fossil from the outermost halo. Now tomography is obviously a form of magic. Everybody knows you can't take a picture of a slice through a solid object without cutting it apart. Like all magic, it's fussy. If you don't have the scanning geometry right when you perform the mathematical spell that reconstructs the image, the picture comes out blurry, or smeared, or has a variety of annoying artifacts. Even when everything works perfectly, you can't avoid some

types of artifacts. You live with them, or you use image hacking to get around them + if you can. But fuzzy halos around the object? *"That's a new one. We never saw that before".* (We've never seen it since, either!) They looked for all the world like the descriptions of "auras" made by self-proclaimed psychics. *"What do we have here, a psychic dinosaur? Is this some kind of omen or something?"*

Anyway, we started the long series of scans. The first images looked good. There was one minor problem with the 2-energy versions of the early images because the fossil had slowly settled a few tenths of a millimeter while we took 50 scans at one energy, went back, and started 50 scans at the other energy. Ok, I figured, we'll do overlapping sets of 20: first 51-70 at high energy, then 61-80 at low energy, then 71-90 at high energy, . . .

So here we were, doing scan number 48 at the second energy. It was about 6:40 pm. The programmers were outside in the 95-plus-degrees heat playing volleyball with people from some of the other companies next door, I was figuring out how the correct the first 50 pictures for the fossil's movement between the two scans, and

BANG!

A transformer about two blocks down the street self-destructs. Very impressive. No warning, no power, no nuttin'-- in milliseconds, flat. Nothing except light from an emergency light in one corner and the quickly opened back door. Dee Summers, the scan operator, and I went running around turning off x-ray high-voltage generators, computers, hard drives, etc., in case there anything funny happened when the power came back on. Then we waited. . . .

Let there be light.

It took about an hour and forty minutes for the power to come back on. When it did, it stayed on and it didn't fluctuate. (Thank heavens for small favors.) We waited fifteen minutes, anyway (routine paranoia). Then we powered up the computers and other equipment, fired up the x-ray source and let it stabilize, reinitialized the system to redo the interrupted scan, and retook scan number 48. Dee fed the raw data through the program sequence that reconstructs the tomogram, and in a couple minutes, it came up on the display.

WHAT?

In place of the expected image of the next slice through the roadkill, there was this abstract-art pattern of looping, intersecting, dark swirls on the screen, vaguely reminiscent of an old spirograph drawing, but done with an airbrush held by a broken-down drunken spirograph. Sort of. It was darker at the center, gave the impression of . . . looking down some sort of dark tunnel . . . toward the light! ! !

This was the first picture from the scanner after an hour and a half of being dead. No power, no voltage, no nothing.

Ladies and Gentlebeings, what we have here is proof, in the form of an original digital image, of a computer's near-death experience.

How much would the National Enquirer pay for this photo? How long would I keep my job after they published it?

Shhhh! Don't tell anyone.

A WILL FOUND A WAY

Mary Lynn S. Johnson

I have always had an interest in things scientific, electronic or mechanical, and my father, bless him, actually was quite encouraging in my interests. I am sure he was the one responsible for the early Christmas gifts I received in the form of a microscope set and a chemistry set. I enjoyed these things greatly, but eventually wanted to go farther. However, I bumped up against a sociological injustice directed at all females who aspire to follow these fields into high school.

I was 16 and attending Lawrence Central High School in Indianapolis, Indiana, but classes then just weren't what they are now. There were no electronics, physics or computer classes, and shop courses were exclusively for boys. I can't tell you how out of place I felt being trapped in Home Economics and Child Development classes!!!

Thoroughly daunted on the academic front, I sublimated by working on cars, fixing the cranky fuel oil furnace that heated our home or - fixing the TV.

I have always loved taking things apart, and thankfully, I can usually get them back together again. Thus, when the huge console TV suddenly lost its picture, I decided to see if I could determine what the problem was.

First, I went to the drugstore and picked up a little booklet from the TV tube tester that I had visited several times with my father. Dad was a backyard inventor and was always fixing or building something. He was the one who taught me how to fix the furnace.

I studied that little booklet carefully. It had a section on trouble shooting that talked about getting the back off the set and being careful to short out certain tubes with a screwdriver before messing around in there. It also helped me to identify just where to look in that maze of parts and

wires. Careful to perform my operations when Mom wasn't home, (she would've hit the roof had she known...) I spent several hours taking tubes up to the tester and checking them out and cleaning the contacts. But despite my best efforts, the TV refused to obey me and work.

So, I picked up the phone book and called a few repair shops. I hoped that one of them could tell me if the problem was one that was even within my ability to fix. The first one I talked to didn't even want to discuss the matter on the phone. He insisted that the TV be brought in. Well, since I sure as heck wasn't able to go lugging that console TV around, I kept dialing. On the third try, I got a nice repairman who was willing to at least discuss it. I described the problem to him in great detail, including the fact that I had removed that back of the set and tested and cleaned all the tubes.

The repairman didn't miss a beat. "Do you have a soldering iron?" he asked.

I told him I did and left him on the line while I fetched it and plugged it in. He then told me to remove the back of the set and gently pry off the connector to the picture tube. As I did, he explained that sometimes the pins got oxidized a bit from all the high voltage and sometimes needed to be re-tinned. Once I had the connector off, he told me to look for the pin just to one side of the 'key' that oriented the connector. That pin, I could easily see was very dark in color and didn't at all look like the others.

"Well, there's your problem!" the repairman said triumphantly. He then instructed me to lightly sand the black stuff off and then run a little solder over the pin to make it shiny silver again, being careful not to apply too much. Then, he told me to put it all back together and give it a try. He patiently waited while I did this.

When I finally turned the set on, the screen obediently lit and the set sprang to life for the first time in weeks. I got back on the phone and profusely thanked the man who'd spent so long talking me though it all and he just laughed and said it had been a slow day anyway.

My Mom did eventually find out what I had done since the TV WAS working again. But she tempered her ire when she realized that she could now ask me to fix it if it went bad again.

Which it did, several times.

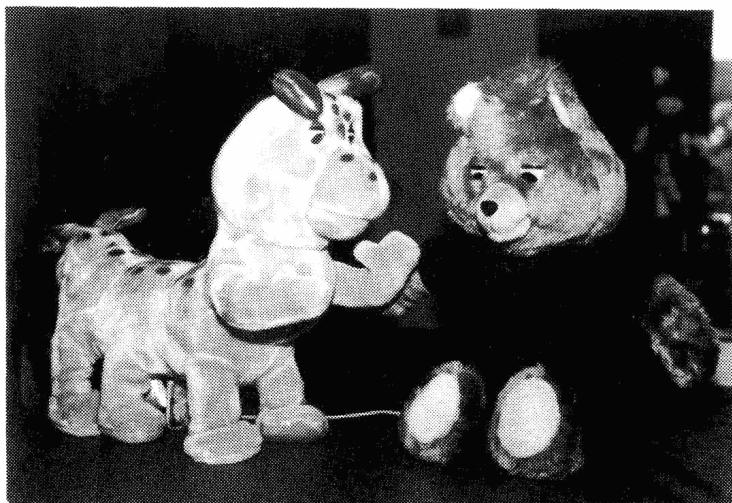
Thanks Dad!

FUZZY ROBOTS

Todd Johnson

Several years ago a talking bear called Teddy Ruxpin was released which used tapes containing dialog, music, and animation control tracks to tell stories. One day someone returned a broken Teddy R. to the store where Mary Lynn worked part time. The toy was exchanged, but then it was noticed that it had broken due to abuse rather than a manufacturing defect. Unable to return it to the manufacturer, the boss let Mary Lynn take it home for a pittance.

We did some minor surgery and cleaned him up and he worked just fine. Curiosity about his control methods led us to drop one of the cassettes into the stereo. On the left channel we heard the usual dialog and music, and on the right channel we heard a loud buzz. We were on to something. Examining the buzzy signal with a scope revealed a train of pulses of varying width which strongly resembled RC servo waveforms. A few evenings spent in the workshop produced a circuit which would mimic the control pulses, and after some tweaking it was soldered up and housed in a small project box. The box featured a knob which controlled the eye movement and a joystick controlling the upper and lower jaws. A line level output could be run to the tape deck for recording purposes, and a separate output ran to a coil made from a small audio transformer with all the "E" laminations



Teddy Ruxpin and pal Grubby. Or, as Bill calls them, "The Boys".

turned to face the same way. The coil was the key to seeing what you were doing. It was glued to an elastic strap which fit around Teddy's middle so the coil was positioned near the tape transport in his back. The control signal could then inductively couple to the tape head and Teddy would thus follow commands in real-time while they were simultaneously being recorded. This was called the "Collar of Obedience".

We made several tapes using this thing, eventually adding a second box so another "animator" could make a control track for Teddy's invertebrate friend "Grubby". He was featured in a couple farewell lunches at work, and sang a great Leon Redbone song: "I Want to be Seduced". Teddy's moment of



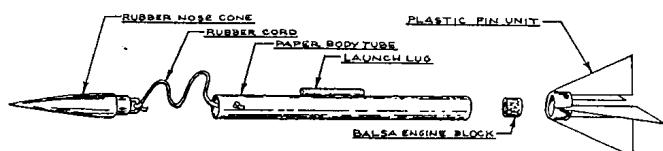
Teddy Ruxpin with his "Collar of Obedience" and control box.

glory came at a Conclave near Detroit. The traditional "Bill and Barry Show", normally featuring GT's own Bill Higgins and Barry Gehm was replaced by "the Bear and Billy Show". Bill and Barry had written and recorded their performance weeks before, and Mary Lynn and I rehearsed the dialog and music with the robots. Eventually we got a successful take and the Bear and the Worm were ready to do their panel. I won't elaborate on the hilarious details of the script here, but suffice it to say that the routine was a real success.

I submitted an abstract for a Teddy Controller construction article to an electronic hobbyist's magazine, but at around that time the manufacturer issued an updated version of Teddy which used custom tape cassettes to prevent second-source software, so I didn't pursue publication further.



Dermot's documented evidence of Guy Wicker's attempt to go into business for himself: To-Your-Door Sushi Delivery.



PYROTECHNICS

The Now and Then Newsletter of General Technics
Published approximately 3 to 4 times a year.

Mismanaging Editors Bill Higgins Dr. Barry Gehm

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SUBSCRIPTIONS are available at the following rates:

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All Other Countries \$10.00 for four issues

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We can also take email submissions in UNCOMPRESSED, plain ascii files. Please, please, please, send a note first to let Todd know what you're going to send first so he can set aside disk space for it. Then send it to: Todd Johnson on Internet tjohnson@almond.fnal.gov

This is only a TEMPORARY email locale for submissions. A more permanent one is coming.

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"Now we've found a way to have a baby in less than one month!"

Photo: Bruce Schneier

Model: Martin Bentley

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